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Environmental Assessment: Source Test and Evaluation Report - Wellman-Galusha (Ft. Snelling) Low-Btu Gasification

Radian Corp.
Austin, TX

Prepared for

Industrial Environmental Research Lab.
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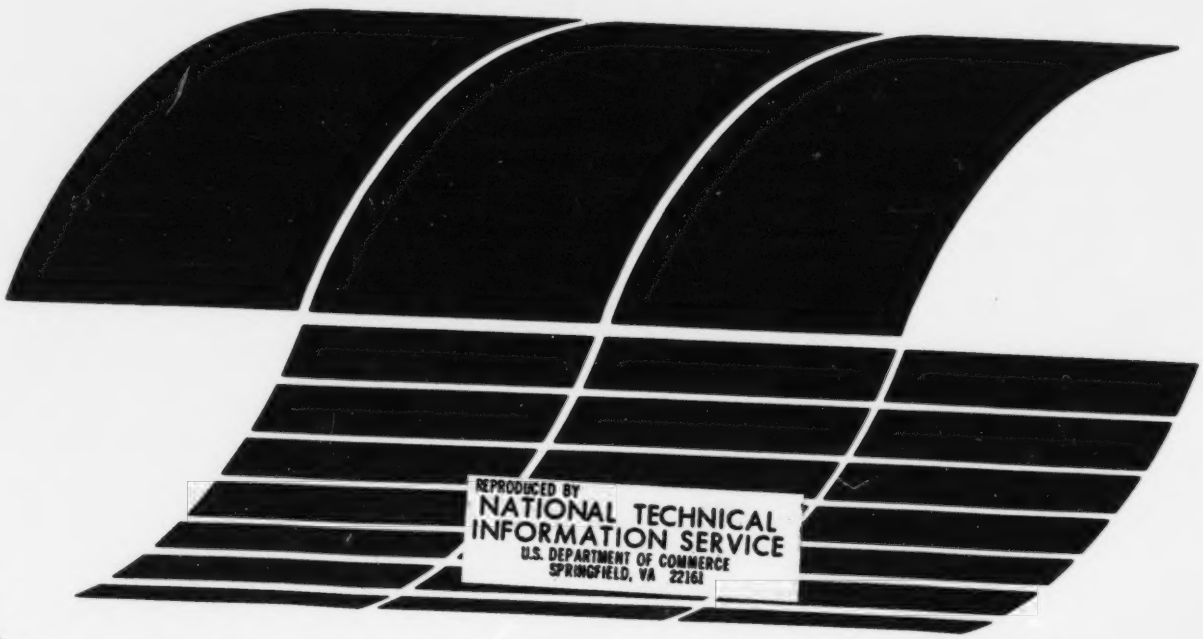

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by

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Prepared for

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ia

ABSTRACT

This report contains the results of a Source Test and Evaluation Program performed on a Wellman-Galusha gasification facility at the U.S. Bureau of Mines Twin Cities Metallurgy Research Center, Fort Snelling site. The gasifier is operated as part of a Bureau of Mines program to investigate the use of low-Btu gas as a fuel for iron ore pelletizing. The major objectives of this program were to provide survey data from which a preliminary assessment of potential environmental imact could be made, and to identify potential problem areas which would require further characterization or pollution control technology implementation. Operational difficulties with the test burner resulted in the product gas being vented to the start-up flare, bypassing the cyclone, during the majority of the lignite test (North Dakota, Indianhead), December 9-15, 1978. Therefore, data for the test burner is limited somewhat and the product gas characterization does not reflect the particulate removal capability of the process cyclone. Within these constraints, the test objectives were met.

The Source Analysis Model/1A was used to provide a rapid screening technique for identifying and prioritizing potentially harmful waste streams. Specifically identified as major contributors to the overall health discharge severity were benzopyrene and carbon monoxide in the product gas; arsenic and chromium in the test burner flue gas. The gasifier ash sluice water exceeded Federal drinking water standards for selenium, iron, sulfate, and total dissolved solids; and the cyclone dust quench water exceeded the standards for fluoride, arsenic, lead, and iron. Leachates of the gasifier ash and cyclone dust fall well below Resource Conservation and Recovery Act specified limits for trace elements. The product gas and the gasifier ash sluice water exhibited moderate in vitro cytotoxicity against WI-38 human lung fibroblast cells.

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In addition to the authors, the following members of the Radian staff were major contributors to the program:

E. A. Baker
R. V. Collins
G. M. Crawford
M. J. Kowalski
D. S. Lewis
W. A. Williams

SECTION 1

INTRODUCTION AND SUMMARY

Radian Corporation of Austin, Texas is performing a comprehensive assessment of low-Btu gasification technology under contract to the Environmental Protection Agency. A major portion of this assessment involves Source Test and Evaluation (STE) programs at operating low-Btu gasification facilities.

This report describes the results of a STE performed on a Wellman-Galusha gasification facility at the Bureau of Mines (BOM) Twin Cities Metallurgy Research Center at the Fort Snelling site. The gasifier is operated by BOM as part of a program to investigate the feasibility of using low-Btu gas as fuel for an iron ore pelletizing kiln. The BOM conducts the program and operates the facility in cooperation with the Pellet Energy Group Steering Committee which includes:

Allis Chalmers
American Natural Gas Service Company
Bechtel Corporation
Bureau of Mines
Burlington Northern
Cleveland-Cliffs Iron Company
Department of Energy
Dravo Corporation
Eveleth Expansion Company
Hanna Mining Company
Inland Steel Company
Inter-City Gas Ltd.
Mansfield Carbon Company
McDowell-Wellman Engineering Company
Davy McKee Corporation
Peoples Natural Gas
Pickens Mather and Company
Reserve Mining Company
U.S. Steel Corporation
Western Energy Company

1.1 TEST OVERVIEW

The objective of the Source Test and Evaluation was to provide survey data under normal operating conditions from which a preliminary assessment of potential environmental impacts could be made. In addition, the test was intended to identify potential problem areas which require

further characterization or application of pollution control technologies. Achievement of these objectives was limited primarily by operational difficulties during the sample collection period. No significant operational problems with the gasifier itself were experienced during the test period. However, difficulties with the test burner resulted in the venting of the product gas to the start-up flare upstream of the cyclone during the majority of the test. Therefore, only a limited amount of data was collected for the test burner, and the product gas results do not reflect the particulate removal capabilities of the cyclone. Product gas characterization was performed on the start-up vent. Within these constraints, the test objectives were achieved.

The Wellman-Galusha gasification system characterized during this test was a commercial scale system providing fuel gas for a pilot scale pelletizing kiln and a combustion test burner. Figure 1-1 provides a schematic of the system indicating the streams which were characterized. Figure 1-2 provides a summary of the data which were collected, and is presented in this report for each stream. Collection of samples and data was conducted during a test run of the system December 9-15, 1978, using North Dakota (Indianhead) lignite.

The major definitive findings of this source test and evaluation may be summarized:

- The two solid wastes (gasifier ash and cyclone dust) generated by operation with Indianhead lignite would be classified as nonhazardous under the RCRA guidelines of 12-18-78. Even though, for most of the trace elements in the coal, greater than 90 percent of the element mass existed in the solids, none of the elements were soluble enough in the RCRA leaching solution to exceed limits. In addition, neither solid waste exhibited a detectable biological response in any of the bioassay tests performed.

- Approximately 20 percent of the coal sulfur was retained by the ash materials. The remainder was converted to gaseous sulfur components in the product gas. Sulfur removal from the gas would be required to meet the current New Source Performance Standards for Utility Boilers.

- The wastewater streams (ash sluice and cyclone dust quench water) exceeded the National Drinking Water Standards for pH, TDS, and certain elemental components. Treatment of these streams prior to discharge would be required.

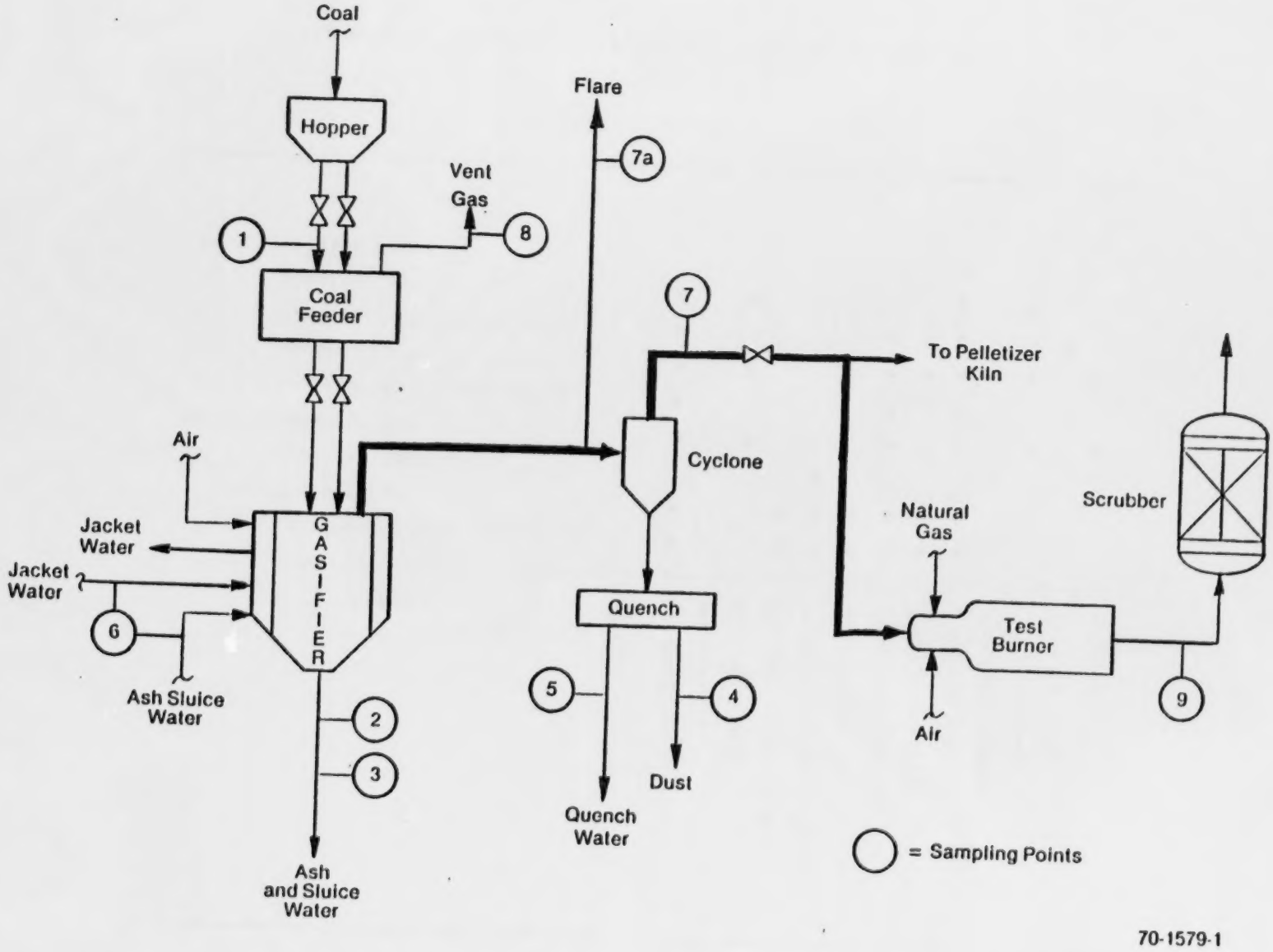

Figure 1-1. Operating Schematic of the Wellman-Galusha Gasifier

	Stream	Flowrate	Fixed Gases	Prox./Ultimate	Gaseous Sulfur Species	Gaseous Nitrogen Species	C_1 - C_6 Hydrocarbon	Screening Organic	Detailed Organic	Trace Elements	Metal Carbonyls	Radioactivity	Water Quality	Leachability
9	Test Burner Flue Gas	●	●		●	●	●	●	●	●				
7, 7a	Product Gas	●	●		●	●	●	●	●	●				
8	Coal Bin Vent Gas					●					●			
2	Gasifier Ash	●		●				●	●	●		●		●
3	Gasifier Ash Sluice Water	●						●		●			●	
4	Cyclone Dust	●		●				●	●	●		●		●
5	Cyclone Dust Quench Water	●						●		●			●	
1	Lignite	●		●						●		●		
6	Service Water									●				

Figure 1-2. Data Matrix for the Ft. Snelling Gasifier STE

- Suspected carcinogenic or toxic compounds were identified in the product gas tar/oil aerosols. Bioassay results confirmed the toxic nature of this material.

- Use of the Source Analysis Model (SAM/1A) to evaluate the potential impacts of the process effluents, indicates, at this point, that organic components are the major contributors to the potential environmental impacts as measured by the estimated discharge severity ratio. Additional characterization will be required to confirm or disprove the presence of these components.

1.2 RESULTS

The results of the source test and evaluation program at the Fort Snelling gasification facility are summarized for the bioassay tests and the Source Analysis Model/1A evaluation of the process streams in Figure 1-3. All of the streams were found to contain constituents in potentially harmful concentrations, however, a low potential for adverse effects is indicated by the bioassay test results for all the streams except the product gas composite. The product gas composite exhibited moderate toxicity in the in vitro cytotoxicity test (RAM) and marked toxicity to the test cells used in the mutagenicity test (Ames). However, no mutagenicity nor any in vivo toxicity was reported from this sample. Over 3500 µg/SCM of polynuclear aromatic hydrocarbons were identified in the product gas samples analyzed.

The general organic character of the process streams followed a trend to more aromaticity in the gaseous streams and cyclone dust quench water. The cyclone dust was more aromatic than the ash and ash sluice water which were primarily aliphatic.

One of the primary concerns associated with the use of coal derived materials as combustion fuels is compliance with regulatory limitations on emissions of oxides of sulfur and nitrogen. Although there were significant operating problems with the test burner during the sampling effort, some useful information relating to these components was obtained. Analyses of the low-Btu product gas determined that 23 percent of the nitrogen in the coal was converted to nitrogen-containing compounds (ammonia and hydrogen cyanide) in the product gas. During combustion, these would be converted to oxides of nitrogen. The total NO_x emission rate would be dependent on burner design since thermally formed NO_x is a major contributor to the total emission.

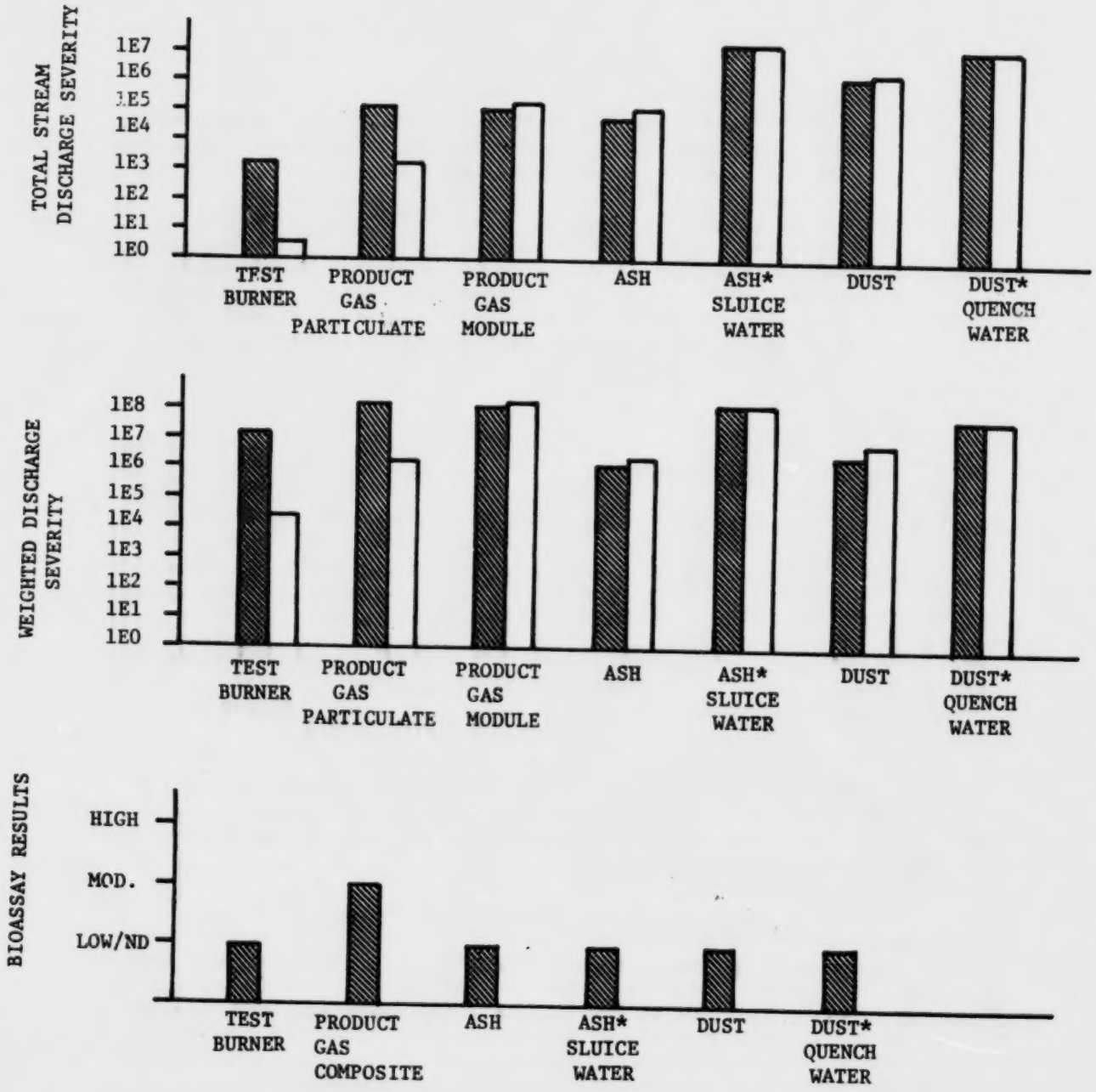

Figure 1-3. Total Stream, Weighted Discharge Severities and Bioassay Test Results for the Fort Snelling Wellman-Galusha Process Streams

The North Dakota lignite used during the test sampling had a sulfur content equivalent to 0.58 lb $S/10^6$ Btu. Under the proposed New Source Performance Standards (NSPS) this sulfur level in the fuel would require a sulfur removal efficiency of 70 percent in the process. Analyses of the product gas and test burner flue gas (prior to scrubbing) showed that the product gas contained 71 percent of the coal sulfur during sampling period two and the test burner flue gas contianed 72 percent of the coal sulfur during sampling period one. These results indicate that the gasification process alone is not adequate to meet the sulfur removal requirements of the proposed NSPS for combustion sources. Additional sulfur removal in the form of acid gas removal processes on the product gas or flue gas desulfurization will likely be required.

The results of the SAM/1A analysis of the data indicate that the trace and minor elemental components are secondary to the organics in health and ecological concern. These elements enter the process in the coal, and during the gasification reactions are distributed among the various streams leaving the gasifier. For almost all of the elements characterized, greater than 90 percent of the mass of the elements entering with the coal exited with the cyclone dust and gasifier ash. During gasification individual elements may (1) remain in the solids and be distributed in the same proportions as the coal ash or (2) be volatilized and exit with the product gas or (3) be volatilized and recondense as the gases leave the zones of very high temperature. Most of the elements fall in the first or third category.

Eight elements have significantly more than 25 percent of their total mass in the gas and may be considered to exhibit category two (volatile) behavior:

Antimony	Lead
Arsenic	Mercury
Cobalt	Selenium
Iodine	Sulfur

Figures 1-4 and 1-5 present the distribution of the elements in the gasifier ash and the cyclone dust. The elements are in ascending order of boiling point of each element. The difference between the sum of cyclone dust and gasifier ash from 100% represents the mass of each element which exits in the test burner flue gas.

Generally, the volatile elements are more concentrated in the test burner flue gas and the cyclone dust. This is not strictly true since the ordering does not consider compounds which may be more volatile than the element. Identification of specific compounds would be required for a more precise correlation.

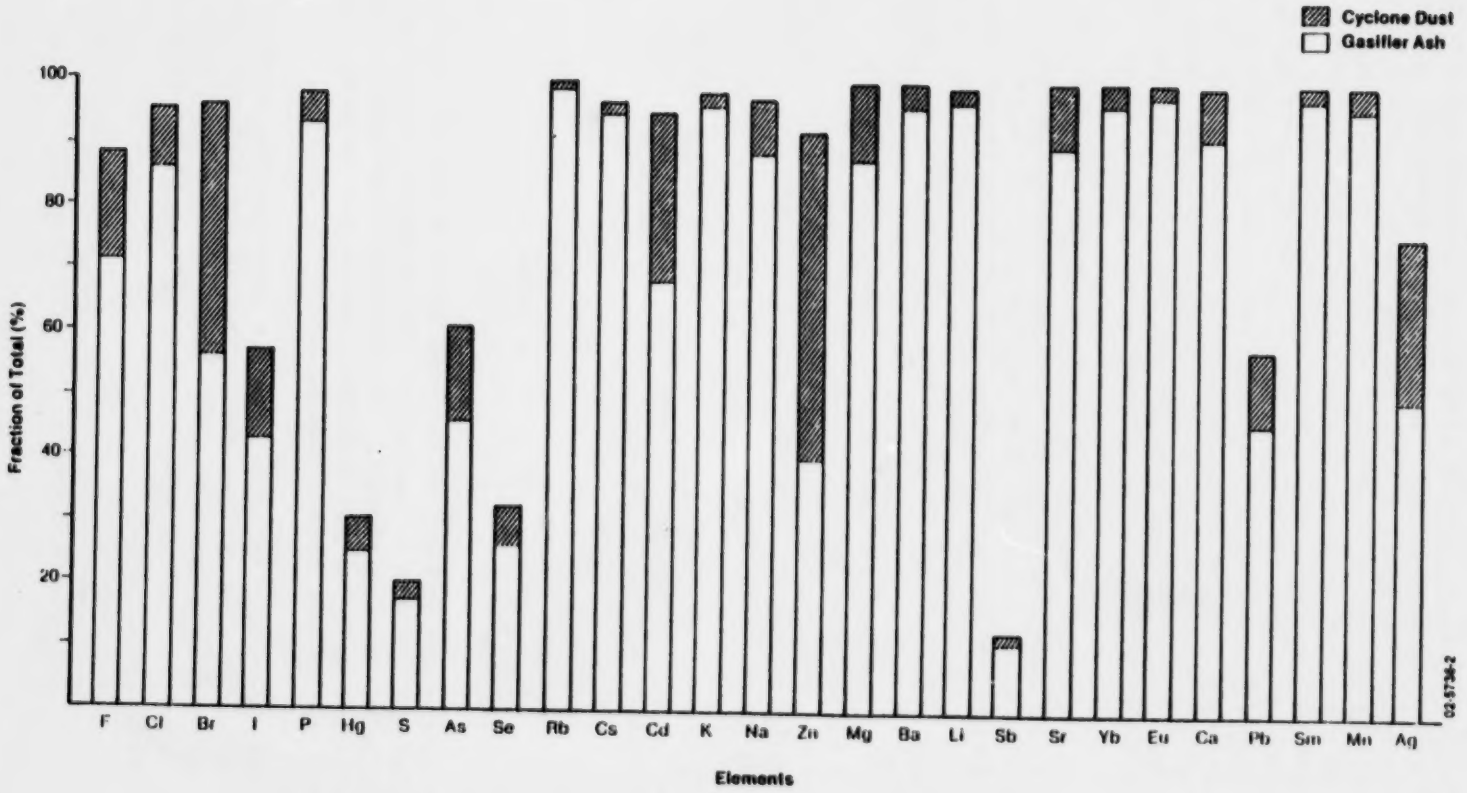

Figure 1-4. Elemental Distributions in the Gasifier Ash and Cyclone Dust Ordered by Increasing Elemental Boiling Point (up to 2212°C)

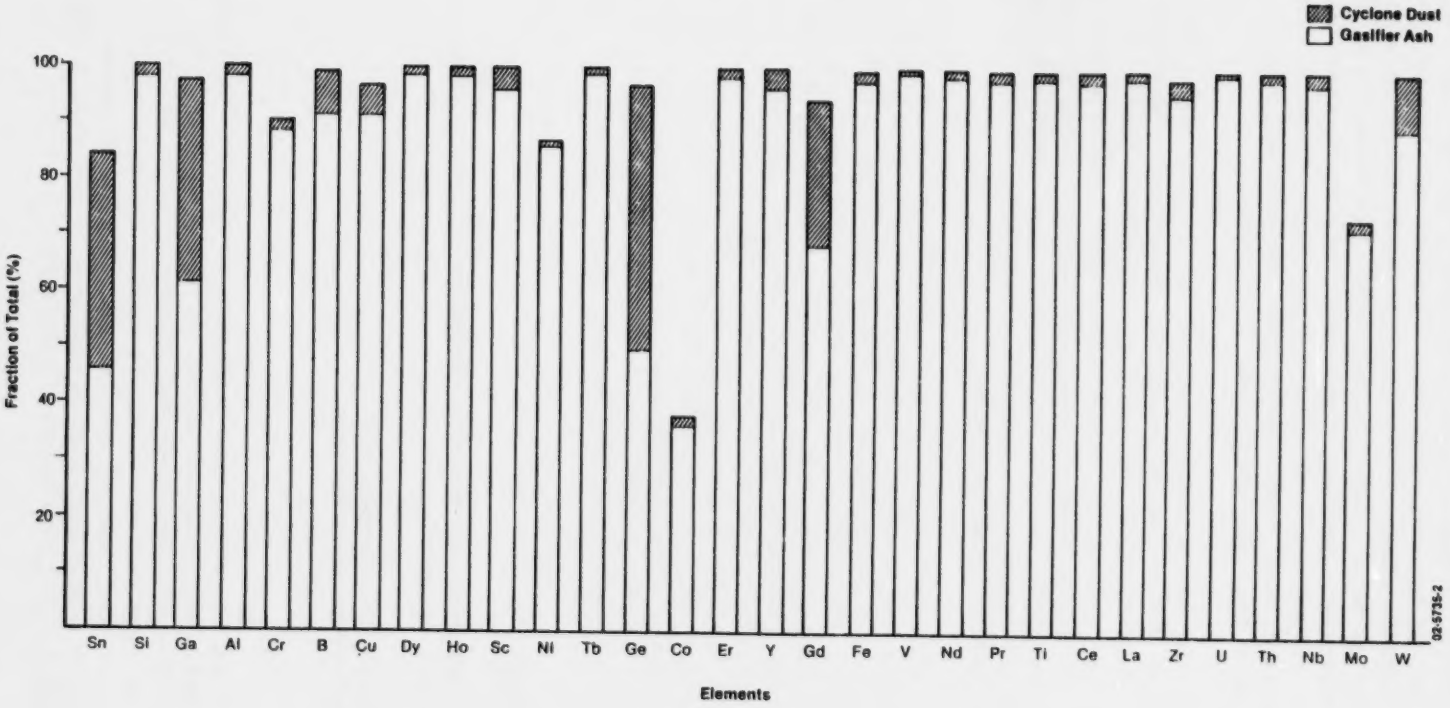

Figure 1-5. Elemental Distribution in the Gasifier Ash and Cyclone Dust Ordered by Increasing Elemental Boiling Point (2270 to 5927°C)

The form in which an element occurs naturally in the coal may be an additional determiner of its distribution. Elements associated preferentially with the organic phase of the coal are more likely to participate in reactions and be more readily volatilized than those found in the mineral phase. Many elements, however, have been found to be associated with the organic phase in one coal and with the inorganic phase in another. Variations can depend on mineral (ash) and sulfur content, which are directly affected by coal type and conditions of formation.

The impact of the trace element content of the two solid wastes on disposal of the material was evaluated using the extraction procedures specified by the Resource Conservation and Recovery Act (RCRA) (Ref. 1). Leachates produced by extraction of the gasifier ash and cyclone dust were analyzed for a number of trace elements and general water quality parameters. Table 1-1 presents the concentrations of those elements with RCRA specified limits. In all cases, the elemental concentrations are at least an order of magnitude below the RCRA limits.

The only two wastewaters in the gasification system are generated by using plant service water to sluice or quench solids. During contact with the solids, components may dissolve in the water which render it unsuitable for discharge without treatment. Table 1-2 presents a comparison of the wastewater compositions with Federal Drinking Water Standards. Both were more basic than allowable pH limits. The gasifier ash sluice water exceeded the standards in total dissolved solids, sulfate, selenium, and iron. Mercury and fluoride concentrations are 70 percent and 50 percent of the standards and will require additional data to insure that they will not exceed the limits. The cyclone dust quench water exceeded the standards for fluoride, arsenic, lead, and iron. In addition, the levels of total dissolved solids, selenium, and barium, appear to warrant further study.

1.3 RECOMMENDATIONS

Specific recommendations for consideration in future assessment activities fall into two categories:

(1) additional data needs, and
(2) methodology recommendations.

Data Needs

The source test and evaluation conducted at the Fort Snelling site combined with the results of a similar effort at the Glen Gery Brick Company (Ref. 2), provide environmental and process data on Wellman-Galusha gasifiers operating on lignite and anthracite coal. Characterization of materials from a similar gasification system operating on bituminous or subbituminous coal would compliment the available data and vastly improve the existing data base for Wellman-Galusha gasifiers.

TABLE 1-1. COMPARISON OF SOLID WASTE EXTRACTS AND RCRA EXTRACT LIMITS

Element	RCRA[1] Extract Limits (12/18/78) (mg/ℓ)	Gasifier Ash Leachate (mg/ℓ)	Cyclone Dust Leachate (mg/ℓ)
As	0.50	0.019	0.033
Ba	10	1.0	1.0
Cd	0.10	<0.007	<0.001
Cr	0.50	0.001	0.001
Pb	0.50	0.007	0.008
Hg	0.02	<0.001	<0.001
Se	0.10	0.014	0.006
Ag	0.50	<0.001	<0.001

[1] RCRA = Resource Conservation and Recovery Act

TABLE 1-2. COMPARISON OF WASTEWATER STREAMS AND DRINKING WATER STANDARDS

Element	NIPDWS [1] (mg/ℓ)	PNSDWR [2] (mg/ℓ)	Gasifier Ash Sluice Water (mg/ℓ)*	Cyclone Dust Quench Water (mg/ℓ)*
As	0.05		0.0033	0.12
Ba	1.0		0.13	0.57
Cd	0.01		<0.002	<0.005
Cl^-		250.	78.	34.
Cr	0.05		0.007	<0.005
Cu		1.0	0.017	0.012
F^-	1.8		0.87	2.0
Fe		0.3	1.2	4.9
Ph	0.05		0.008	0.099
Mn		0.05	0.002	<0.001
Hg	0.002		0.0014	0.0004
Se	0.01		0.020	0.006
Ag	0.05		0.001	0.002
Zn		5.0	0.044	0.035
$SO_4^=$		250.	2860.	55.
pH		6.5-8.5	9.3	10.0
TDS		500.	4300.	390.

[1]NIPDWS = National Interim Primary Drinking Water Standards, Federal Register (3/31/77)

[2]PNSDWR = Proposed National Secondary Drinking Water Regulations, Federal Register (3/31/77)

*Metal results by SSMS except As, Hg, and Se which were done by hydride AA. Non-metal species by Standard Methods.

Operational problems during the sample collection portion of this STE program precluded complete characterization of the test burner flue gas. The combustion effluents which were characterized were produced during combustion with extremely high excess air. Combustion data for low-Btu fuel gas under more typical commercial combustion conditions is required to adequately characterize the potential environmental impacts.

Additional analytical effort is required to confirm or disprove the presence of the assumed "worst case" chemical forms used in the Source Analysis Model/1A results presented in this report.

The variability of key components over long-term operation still requires definition. This will require longer periods of stable gasifier operation (on the order of 30 days) than have thus far been available.

Methodology

The detailed organic analysis approach based on the iterative use of the SAM/1A results proved to be a valuable tool in the planning of analytical activities. Computerization of the SAM/1A calculations makes this practical by reducing the effort required. Continued use of this approach in conjunction with the addition of generalized sample characterization techniques is recommended.

A small scale electrostatic precipitator (ESP) was used in the product gas sampling train, and was highly successful and efficient for the collection of particulates and aerosol tars. Continued use of the ESP for tar laden streams is recommended after modification of the equipment for operation at higher temperatures.

Both the silver persulfate collection solution and the acid/base collection trains were used during the Fort Snelling STE for collection of vaporous trace elements. However, direct comparison of the two was not possible. An evaluation of the collection efficiencies of the two approaches is recommended.

Two specific analytical recommendations resulted from this program. Addition of an ethyl ether extraction to the organic sample preparation significantly increased the extraction efficiency over extraction with methylene chloride only. Elemental analysis with inductively coupled argon plasma emission spectrometry (ICP) proved to be a complementary technique to spark source mass spectrometry and greatly extended the range of quantitation. Both of these additions should be continued.

SECTION 2

PLANT DESCRIPTION

A commercial size Wellman-Galusha gasifier was assembled at the Bureau of Mines Fort Snelling test facility to determine the feasibility of using low-Btu gas (5.6E6 J/m^3, 150 BTU/scf) to pelletize iron ore. During the late fall of 1978, several short test runs, approximately 5 days each, were made using coke, bituminous coal, semi-bituminous coal (ranking slightly higher than subbituminous), and a lignite as gasifier feedstocks. The gas produced during these tests was burned in a test burner designed to study the low-Btu gas combustion characteristics. The following sections provide a description of the Fort Snelling gasification facility configuration and operation during the source test and evaluation program conducted by Radian.

2.1 PROCESS DESCRIPTION

The following brief process description introduces the reader to the program test facility shown in Figure 2-1.

Coal Handling

At the Fort Snelling test facility, coal is stored in piles near the gasifier. A front-end loader moves the hopper. The coal is moved by the belt conveyor to a vibrating screen where coal fines less than 1.9 cm (3/4 inch) are removed for disposal. From the screen, the coal is moved to the top of the gasification building by a bucket elevator where it falls into a coal storage bin.

Coal from the coal bin flows by gravity into the two coal hoppers located atop the gasifier. The coal hoppers continuously feed coal into the gasifier by gravity flow through two vertical feed pipes. Four slide valves are used to control the coal flow rate.

Gasification/Gas Purification

In the gasifier (shown in Figure 2-2) a water-cooled agitator distributes the coal evenly as it falls from the feed bin. As the hot product gas rises from the bottom of the gasifier, it dries and devolatilizes the coal as the coal moves down in the gasifier to the gasification zone. At the bottom of the gasifier, the coal is partially combusted by moist air forming a low-Btu product gas and ash. The ash falls through a rotating grate, is dumped through a valve at the bottom of the gasifier, and is disposed. Steam to the gasifier is provided by passing air over hot water in the gasifier cooling jacket before the air enters the bottom of the gasifier.

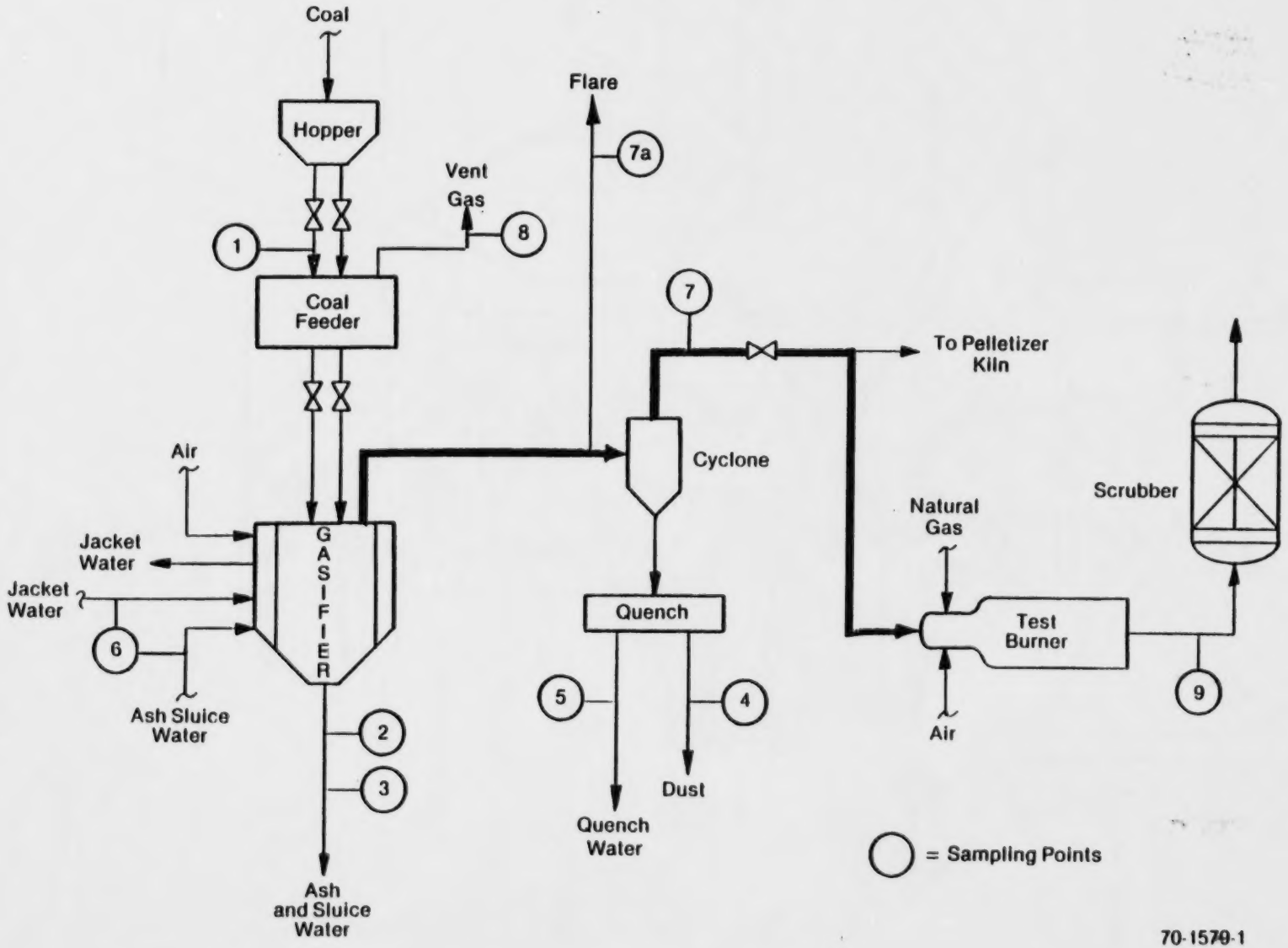

Figure 2-1. Operating Schematic of the Wellman-Galusha Gasifier

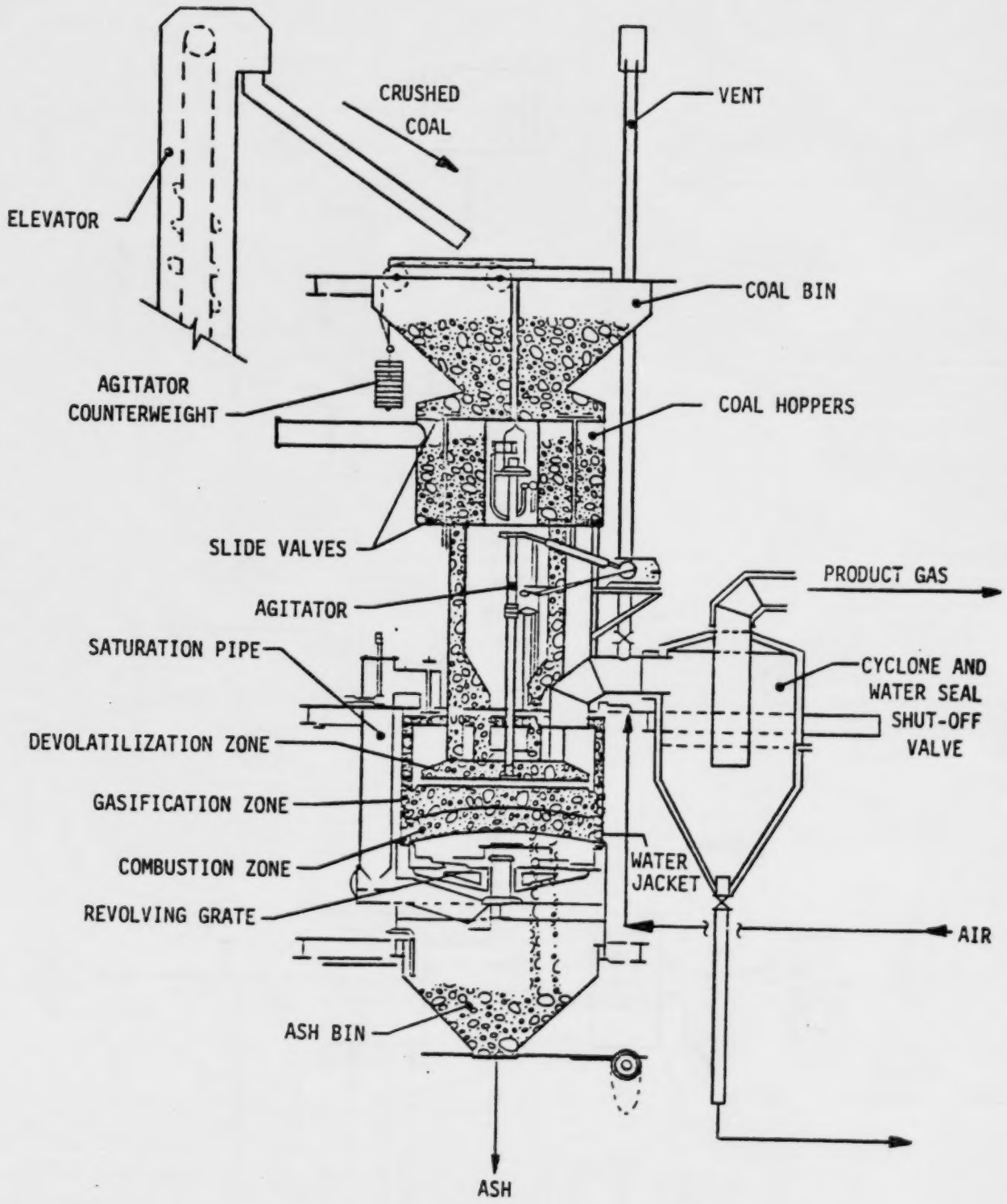

Figure 2-2. Diagram of a Wellman-Galusha Gasifier Equipped with a Coal Bed Agitator

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The hot low-Btu product gas is cooled as it passes up through the coal in the gasifier. During start-up or banking, the gasifier product gas is diverted to the start-up vent and flare. During normal operation, the product gas passes through a refractory-lined cyclone before going to the pelletizer kiln and test burner. Large particulates in the product gas fall to the bottom of the cyclone, down the cyclone leg, and into a water quench. The quenched particulates are scraped out of the quench trough, passed over a dewatering screen and disposed. Water from the quench trough flows to the process sewer.

Test Burner

Most of the low-Btu gas produced in the Wellman-Galusha gasifier is burned in a test burner. The test burner is a combustion chamber designed to study the burning characteristics of low-Btu gas. The combustion gases from the test burner are contacted with a caustic water solution which removes SO_2 before the gases are discharged to the atmosphere through an exhaust fan. Spent caustic water solution from the combustion gas scrubber is discharged to the process sewer from the scrubber recycle tank.

Waste Stream Summary

The Fort Snelling gasifier/test burner facility major waste streams are:

- Gaseous waste streams
  - coal feed system vent gases,
  - start-up flare combustion gases, and
  - test burner scrubber exhaust.
- Liquid waste streams
  - jacket water,
  - ash sluice water,
  - cyclone quench water, and
  - test burner flue gas scrubber blowdown.
- Solid waste streams
  - gasifier ash,
  - cyclone particulates, and
  - coal fines.

2.2 PLANT OPERATION

The Fort Snelling Wellman-Galusha gasifier was started up on coke December 8, 1978, after being shut down to repair a leak in the gasifier water jacket. After achieving stable operation on coke, a North Dakota lignite (Indianhead) was started to the gasifier feed system on December 10. Late on December 11, the lignite had displaced the coke, and the plant was operating as shown in Figure 2-3. However, before gas sampling was initiated, a sudden buildup in pressure in the gasifier test burner system caused the test burner to flame-out at ∿0200 hours on December 12. One set of solid and liquid samples was collected just before the flame-out (2300-2400 hours of December 11).

The gasifier was banked after the test burner flame-out and until the test burner system was checked. Normal plant operation was reestablished by noon of December 12. Sampling of solid and liquid streams (sample points 1, 2, 3, 4, 5, 6) and the test burner and product gas streams (points 7 and 9) was initiated. However, due to a pressure buildup in the gasifier system, the gasifier product gas to the test burner and the pelletizer kiln was automatically sent to the afterburner at ∿2200 hours on December 12. Sampling of the unit was suspended at this time.

Inspection of the product gas line to the test burner and pelletizer kiln revealed plugging due to the accumulation of tar and condensate (organic and aqueous). However, the gasifier operation was continued with the product gas being vented to the flare as shown in Figure 2-4. Sampling of the test burner exhaust gas and pelletizer kiln exhaust gases could not be completed under this mode of operation. However, sampling of the coal bin vent gases, the gasifier product gas, and gasifier solid and liquid streams (sample points 1, 2, 3, 6, 7a, and 8) was accomplished from ∿1700 hours on December 13 through ∿0200 hours on December 14.

Due to the early shutdown of the test burner, only a partial characterization of the combustion gases was made. In addition, the gasifier operation on December 13th and 14th was hindered by channeling in the gasifier resulting in oxidation at the top of the gasifier bed. Figure 2-5 summarizes the pertinent gasifier test burner operating conditions during the two sampling periods.

2.3 PROCESS FLOW RATES AND MASS BALANCES

Pertinent process data were collected by the Bureau of Mines personnel and computerized data gathering system. Flow rates and material balances provided by the Bureau of Mines were used to calculate the material balances for the two sampling periods as summarized in Table 2-1. Data presented for the second sampling period were averaged over two data segments provided by the Bureau. The data provided by the Bureau of Mines are presented in Appendix A; in addition, the estimated error limits for each of the process streams are presented.

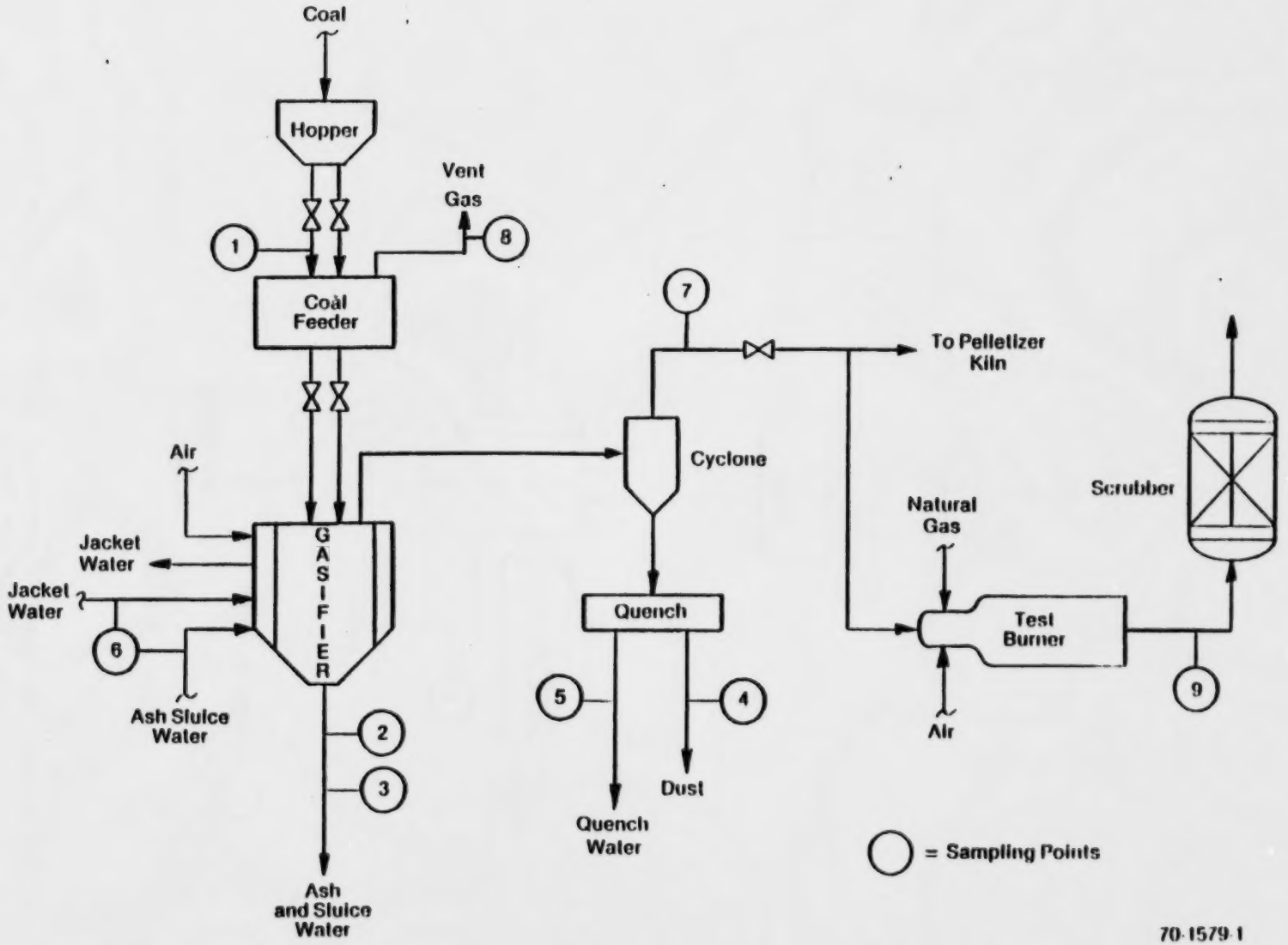

Figure 2-3. Normal Operation Schematic of the Wellman-Galusha Gasifier

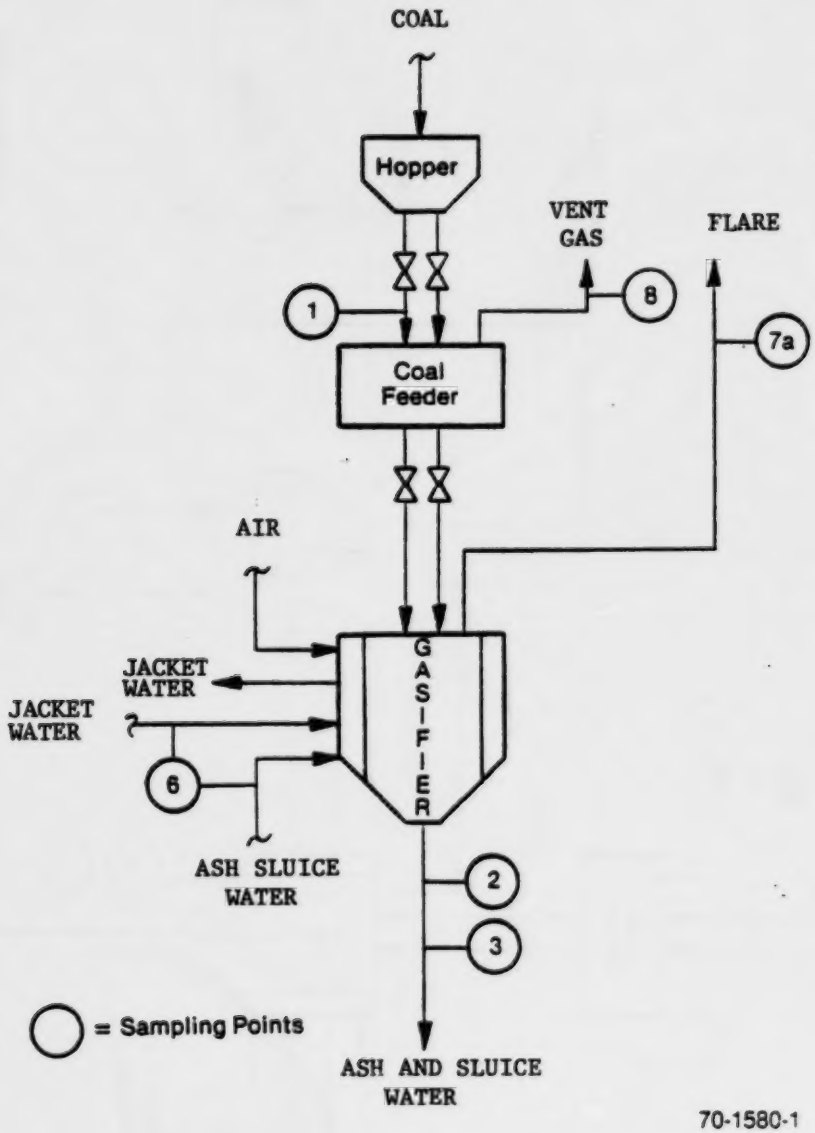

Figure 2-4. Operating Schematic of the Wellman-Galusha Gasifier with Product Gas Vented

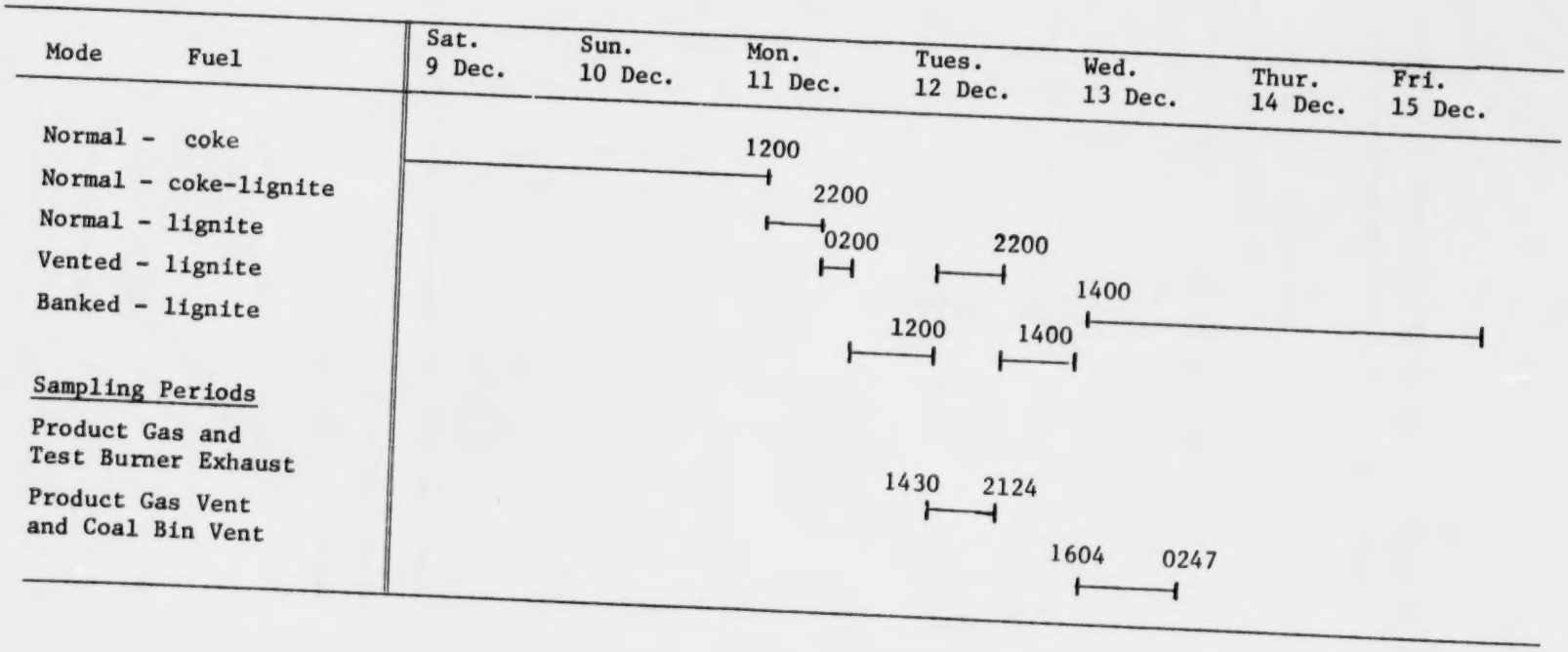

Figure 2-5. Summary of Fort Snelling Gasifier Operation and Sampling Periods

TABLE 2-1. FORT SNELLING PROCESS FLOW RATES AND MATERIAL BALANCES

Stream Description	FLOW RATES (g/s) Sampling Period 1	Sampling Period 2
INPUT STREAMS		
Air	500 ± 50	440 ± 44
Water	67 ± 7	66 ± 7
Coal	320 ± 32	250 ± 25
Total	887 ± 60	756 ± 51
OUTPUT STREAMS		
Ash	27 ± 3	21 ± 2
Dust	3.8 ± 2	
Hot Product Gas	860[1] ± 86	700[2] ± 70
Total	891 ± 86	721 ± 70
RATIO INPUT TO OUTPUT	0.99	1.05

[1]Includes product gas, steam, and tar.

[2]Includes product gas, steam, tar, and dust.

SECTION 3

METHODOLOGIES

The techniques cited (Ref. 3) and described in Appendix C formed the core of the approach to the source test and evaluation of the Fort Snelling facility. Additions to or deviations from these methods are described in the following sampling and analytical methodology sections.

3.1 SAMPLING METHODOLOGIES

Due to the plant operational problems encountered during the on-site sampling and analysis portion of this program, not all of the originally scheduled sampling could be implemented. A partial characterization of the test burner flue gas was completed; however, no samples of the pelletizer kiln exhaust gas were taken. In order to determine the fate of ammonia and cyanide in the test burner, test burner flue gas samples were obtained simultaneously with product gas samples for the determination of ammonia and cyanide concentration. During this sampling period, samples for C_1 to C_6 hydrocarbons, volatile sulfur species, and fixed gas content were also taken at both locations. A pressure build-up in the gasifier caused by an accumulation of particulates, tar, and condensate in the product gas line resulted in the product gas being sent to the start-up flare, bypassing the cyclone, test burner, and pelletizer kiln. Therefore, the bulk of the product gas sampling was done at the start-up vent to the flare prior to the cyclone. Samples of the coal bin vent gases, the gasifier ash and ash sluice water were taken during this mode of plant operation. Cyclone dust and dust quench water samples were only obtained during the period of normal cyclone operation. An overview of the samples taken and the sampling techniques used at the gasifier/test burner is given in Figure 3-1.

Sampling procedures for the test burner flue gas are discussed in Appendix B of this document. The grab samples of the liquid and solid streams were taken periodically during the sampling effort and are discussed also in Appendix B.

3.1.1 Product Gas Sampling

Only the ammonia and cyanide impinger samples and gas samples for fixed gases, volatile sulfur species, and C_1 to C_6 hydrocarbons were taken of the product gas at the exit of the cyclone. Due to the pressure buildup, the product gas was then routed through the start-up vent to the flare thus bypassing the cyclone. A 51 mm port on the start-up vent was used for sampling; this port had no gate valve and was entered directly. The sampling at this site was essentially a continuation of the product gas sampling program. The product gas to the flare contained all the elements

SAMPLES	Test Burner	Product Gas	Product Gas (vent)	Coal Bin Vent Gas	Gasifier Ash	Gasifier Ash Sluice Water	Cyclone Dust	Cyclone Dust Quench Water	Lignite	Service Water
Bioassay - bulk	●		●		●	●	●	●		
Organic - bulk					●	●	●	●		
Inorganic - bulk					●	●	●	●	●	●
Tenax resin			●	●						
C_1-C_6 Hydrocarbons	●	●	●							
Sulfur species	●	●	●							
Fixed gases	●	●	●							
Metal carbonyl impingers				●						
Sulfur impingers			●	●						
Cyanide impingers	●	●		●						
Ammonia impingers	●	●		●						
Trace metals - acid/base			●							
Trace Metals SASS	●									
Condensate	●		●							
XAD-2 resin	●		●							
ESP particulate			●							
SASS particulate	●									

Figure 3-1. Sampling Matrix for the Wellman-Galusha Gasifier at the U. S. Bureau of Mines Plant

of the product gas plus particulates and high molecular weight aerosol tars normally removed by the process cyclone.

The sampling train used at both product gas sampling locations is shown schematically in Figure 3-2. This system contained sample taps for gas chromatography grab samples and for sampling with two independent impinger trains behind an electrostatic precipitator.

3.1.2 Electrostatic Precipitator Sampling

Due to the high oils and tars concentration in the product gas, an electrostatic precipitator (ESP) was used instead of the SASS cyclones and filter for particulate removal during the product gas sampling. The ESP removes particulates and aerosol tars from the gas stream by creating an electron wind between the negatively-charged central electrode and the positively-charged outer wall. This electron wind imparts a negative charge to the aerosolized particles. These particles are then attracted to the outer wall of the ESP. As the gas stream passes through the collection zone, the particles migrate to the outer wall, discharge, and fall down to the collection cup at the bottom of the ESP. A schematic of the ESP used is shown in Figure 3-3.

The particulates collected by the ESP and filter would be common to any train used. However, the ESP was operated at 140°C (285°F), therefore, the vapor phase material collected in the organic module was that material which passed through the ESP at 140°C (285°F), not 200°C (400°F) as for other SASS runs. Due to this lower operating temperature of the ESP, some vapor phase material which would normally be collected in the organic module was collected in the ESP as tarry condensables in addition to the aerosol tars removed from the gas stream by electrostatic precipitation.

The material recovered from the ESP, the ESP rinse, and filter remained separate through a portion of the analytical matrix to enable the calculation of ESP efficiency. The quantity of methylene chloride insoluble material was also determined to distinguish between particulates and tars. The ESP efficiency in removing particulates and aerosol tars from the product gas was calculated to be 99.2% as shown in Table 3-1. Of the material collected, 32% was methylene chloride insoluble.

The SASS organic module was operated in the standard manner except the XAD-2 canister was separated from the condenser to reduce contact between resin and condensate. Due to the size of the ESP, the flow rate through the entire system was limited to 280 ml/sec. Also, due to the high organic loading of the product gas, the total gas volume of the sample was reduced from the recommended 30 SCM in order not to overload the organic module.

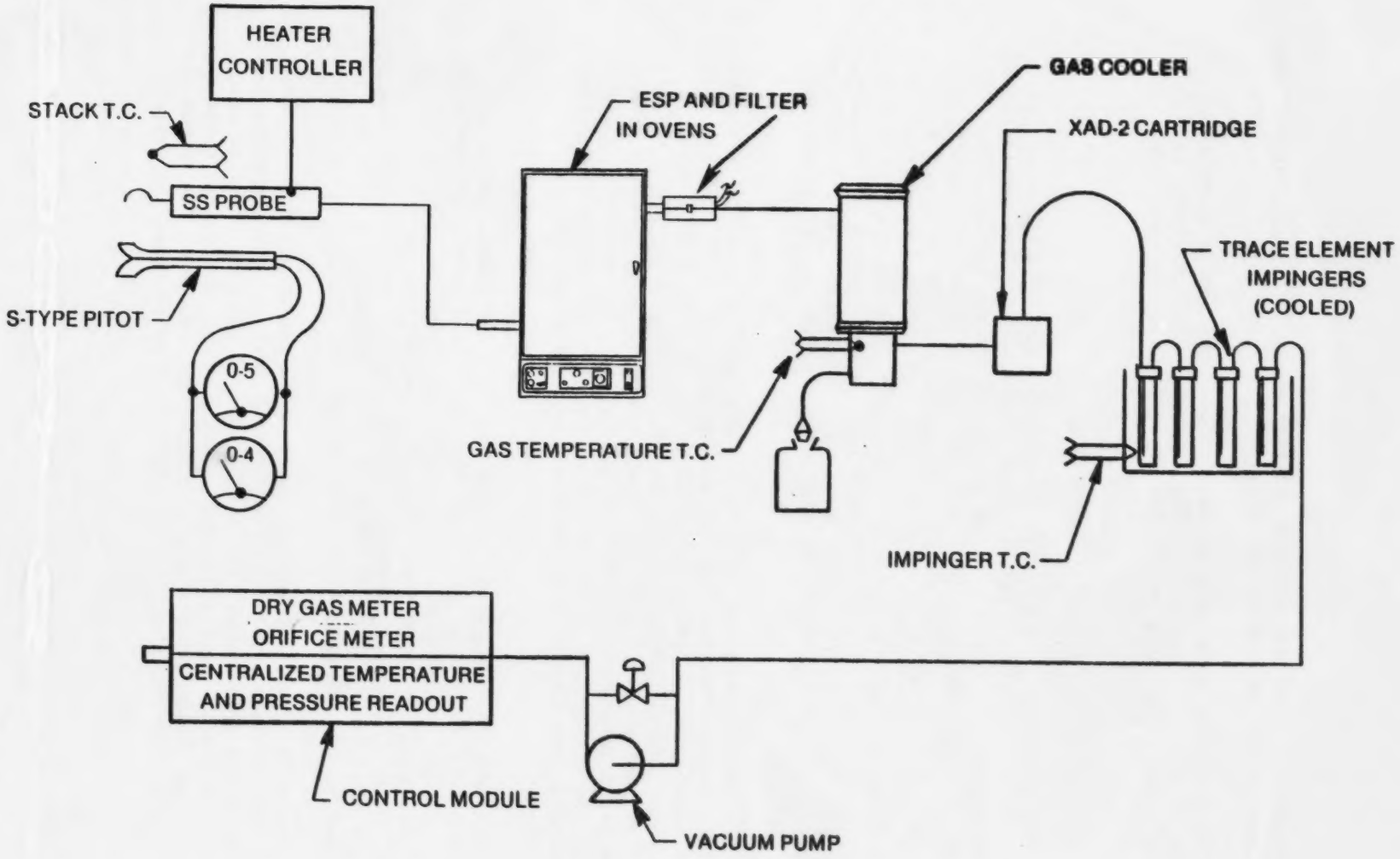

Figure 3-2. Product Gas Sampling System with ESP

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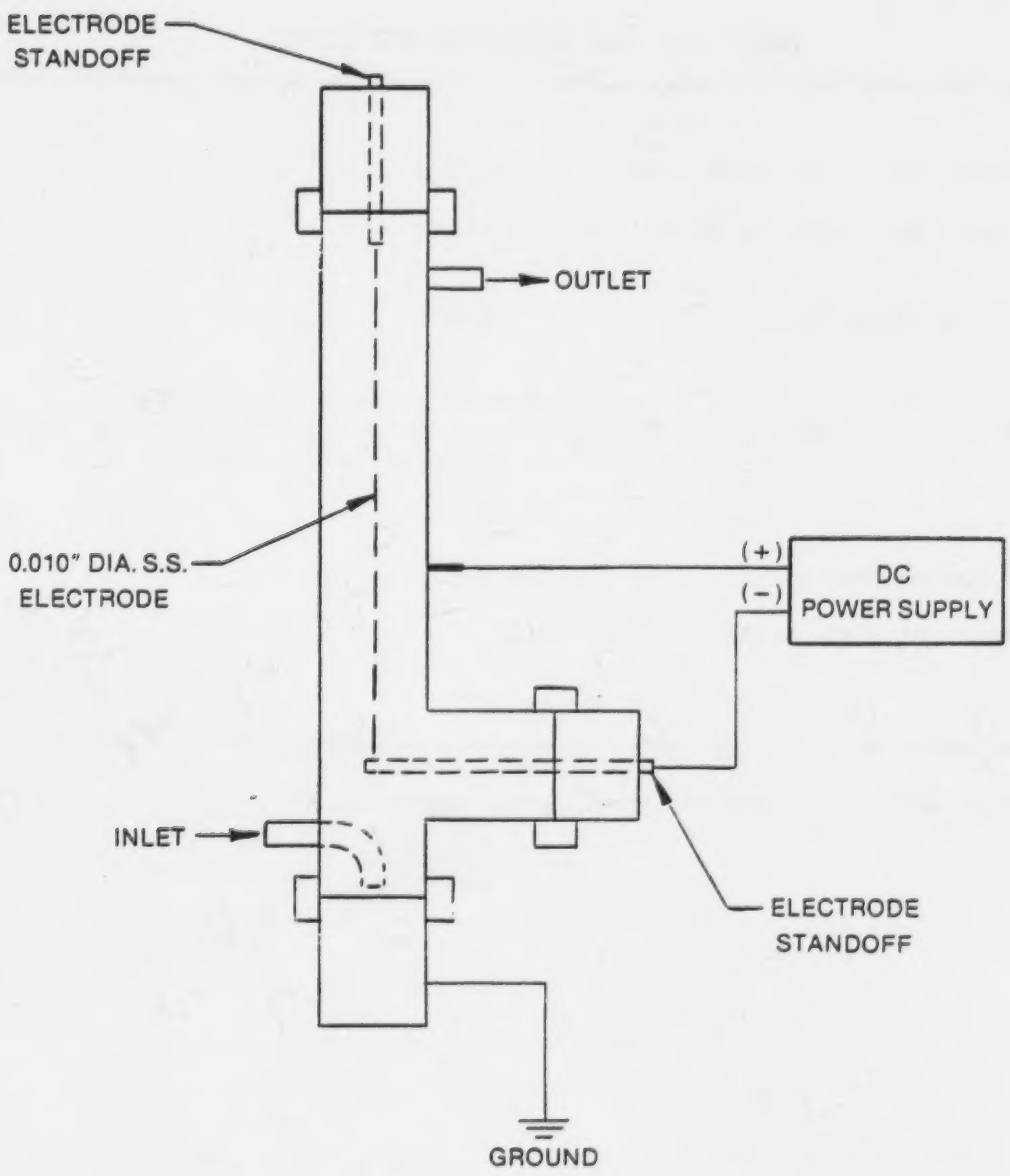


Figure 3-3. Schematic of ESP Used for Aerosol and Particulate Removal

TABLE 3-1. ESP COLLECTION EFFICIENCY

Material Collected by the ESP:	39.754g
Material Collected by the Filter:	0.306g
TOTAL MATERIAL COLLECTED:	40.060

$$\text{ESP Collection Efficiency (\%)} = \frac{\text{Material collected by the ESP}}{\text{Total material collected}} \times 100$$

$$= 99.2\%$$

Gas Volume Sampled: = 8.5 SCM[1]

Average Sampling Rate: = 0.28 ℓ/s

[1]SCM at 25°C (77°F) and 101 kPa (1 atm), dry basis.

Gas samples were taken for GC analysis at the inlet of the ESP and at the exit of the ESP to ascertain the effects of the ESP on gas composition. No measurable effects or discernible trends were seen. The results of these gas analyses are given in Appendix D.

3.1.3 Trace Element Sampling

Trace metals in the gas streams were collected using two different sampling systems. Two ammonium persulfate impingers were used to collect vaporous trace metals in the test burner flue gas upstream of the caustic scrubber. However, vaporous trace elements in the product gas exiting the ESP and organic module were collected by a series of impingers: two 10 percent nitric acid impingers and two 10 percent sodium hydroxide impingers.

The planned comparison of the two collection systems was not done because of operational problems with the gasifier. An evaluation of the collection efficiencies of the two trace element collection systems still needs to be made.

3.1.4 Ammonia and Cyanide Sampling

Each ammonia or hydrogen cyanide sampling train consisted of two absorbing impingers. Collection efficiencies of the absorbing solutions were calculated by analyzing both impingers in each sample run. Collection efficiency of the first impinger was defined as:

$$E = \frac{\mu g_I}{\mu g_I + \mu g_{II}} \times 100$$

where: μg_I = total µg of analyte in first impinger, and

μg_{II} = total µg of analyte in second impinger.

Ammonia was collected totally in the first impinger even at the high concentration of the product gas. Some carryover at high concentrations was detected in the cyanide impingers. Assuming the collection efficiency of the second impinger is the same as the first, the overall collection efficiency for the ammonia and cyanide absorbing systems was greater than 99 percent. The collection efficiency data for ammonia are summarized in Table 3-2 and for cyanide in Table 3-3.

TABLE 3-2. AMMONIA COLLECTION EFFICIENCY

Stream	Run #	Impinger #	Total µg/Impinger	Collection Efficiency
Product Gas	1	1	20,400	> 99%
	1	2	ND	
	2	1	18,000	> 99%
	2	2	ND	
	3	1	8,000	> 99%
	3	2	ND	
Coal Bin Vent	1	1	193	> 88%
	1	2	ND	
	2	1	ND	---
	2	2	ND	
	3	1	ND	---
	3	2	ND	
Test Burner Flue Gas	Ammonia not detected			

ND = not detected at less than 25 µg ammonia per impinger.

TABLE 3-3. CYANIDE COLLECTION EFFICIENCY

Stream	Run #	Impinger #	Total µg/ Impinger	Collection Efficiency
Product Gas	1	1	36,600	98%
	1	2	760	
	2	1	26,000	94%
	2	2	1,800	
	3	1	23,000	97%
	3	2	760	
Test Burner	1	1	ND	-
	1	2	ND	
	2	1	325	98%
	2	2	7	
	3	1	457	99%
	3	2	2	
Coal Bin Vent	1	1	27	>87%
	1	2	ND	
	2	1	17	>81%
	2	2	ND	
	3	1	20	>83%
	3	2	ND	

ND = not detected at less than 4 µg cyanide per impinger.

3.1.5 Gas Phase Sulfur Species Collection

Two methods were employed to determine the concentration of the gaseous sulfur species present in the product gas and the coal bin vent gas. An impinger collection method using six percent hydrogen peroxide for the sulfur oxides, 2N zinc acetate to trap sulfide, and 0.2N potassium hydroxide in ethanol to collect carbon disulfide and carbonyl sulfide, was compared to the flame photometric GC (FPD-GC) determination which is discussed in detail in Appendix C. The results from the impinger methods are given in Table 3-4.

At the product gas start-up vent to the flare, the total volatile sulfur concentration by FPD-GC was 1280 vppm $\pm$ 200 (2σ) the average of six duplicate analyses performed over a six hour period, while the impinger collection method gave a total volatile sulfur concentration of 990 vppm. Although further evaluation of the selective speciation and trapping efficiency of the impinger method is called for, the total volatile sulfur concentration is in general agreement with the flame photometric-GC method.

Gas chromatography samples from the coal bin vent were not sufficiently pressurized to provide an analysis without the possibility of dilution occurring. The two impinger runs at this location yielded 1.5 and 2.1 vppm total volatile sulfur species, respectively.

3.1.6 Gas Sampling for Organics

Sampling for organics in the product gas and the test burner flue gas deviated from recommendations (Ref. 3) only by the arrangement of the condensate trap and the resin canister. At both of these locations, as previously stated, the condensate trap was prior to the XAD-2 resin canister.

To characterize the volatile organics present, a sorbent trap filled with Tenax GC/silica gel was used for the product gas prior to the cyclone. A 100 ml sample of the product gas was pumped through the tube for subsequent thermal desorption GC-MS analysis. Tenax trap samples of the coal bin vent gas were also taken; however, these samples were not analyzed due to the possibility of an unknown volume of diluent air entering the sampling system.

TABLE 3-4. TOTAL VOLATILE SULFUR IN GAS STREAMS BY IMPINGER COLLECTION

STREAM	RUN	IMPINGER	IMPINGER WEIGHT, g	mg S/ IMPINGER	TOTAL mg S	TOTAL SCM	mg S/SCM	SULFUR vppm
Product Gas*	1	2N ZnOAc	282.06	452				
		0.1N KOH in EtOH	159.49	4.67	459.7	0.3549	1295	990
		6% H_2O_2	233.48	3.0				
Coal Bin Vent Gas	2	2N ZnOAc	198.95	1.08				
		0.1N KOH in EtOH	147.47	<.005	1.31	0.6875	1.9	1.5
		6% H_2O_2	218.60	0.23				
Coal Bin Vent Gas	3	2N ZnOAc	186.90	0.20				
		0.1N KOH in EtOH	147.47	<.005	1.59	0.5675	2.8	2.1
		6% H_2O_2	209.15	1.39				

SCM at 25°C (77°F) and 101 kPa (1 atm), dry basis.
*at the vent to the flare.

3.2 ANALYTICAL METHODOLOGIES

Laboratory analyses of the solid and liquid samples followed the analysis matrices shown in Figures 3-4 and 3-5, respectively. The samples joined by brackets in the analyses diagrams were composited prior to the analyses. Descriptions of the analytical procedures used are given in Appendix C of this document.

3.2.1 Elemental Analysis

Analysis for 22 elements by inductively coupled argon plasma emission spectrophotometry (ICP) in addition to spark source mass spectrometry (SSMS) analysis was performed on the following samples:

- cyclone dust,
- gasifier ash,
- product gas particulates,
- gasifier ash sluice water, and
- cyclone dust quench water.

This comparison was done to determine the feasibility of using ICP for the screening of low-Btu gasification samples. The ICP requires the sample be in a liquid form for analysis, i.e., solids must be dissolved. Spark source can be run on either solid or liquid samples with little or no preparation. ICP has a greater analytical dynamic range (10^5) than SSMS, thus enabling quantification of the higher concentration components not possible with SSMS. The lower detection limits of ICP however can be limited because of dilution in the digestion process. Detection for the lanthanides and actinides using SSMS are far superior to those of ICP. Tables 3-5 and 3-6 present a comparison of available ICP and SSMS data. For the volatile elements, mercury, arsenic, antimony and selenium, the comparison is extended to ICP, SSMS, and atomic absorption spectrophotometry (AA) in Table 3-7. No clear trends toward a single analytical technique are apparent in these data.

3.2.2 Organic Screening Analysis

The organic screening analysis followed the procedures given in Appendix C. One significant deviation from the previously used procedures was the addition of ethyl ether as an extraction solvent. The ether was used after the regular methylene chloride extraction in order to recover the highly polar organics which are not as efficiently extracted by methylene chloride. All of the extracts were kept separate for preliminary total chromatographable organics (TCO) and gravimetric (GRAV) determinations to evaluate the added efficiency of the ether extractant.

Sample			Analyses												
Log Number	Description		Ultimate	Proximate	Mineral Analysis	Sizing	Morphology	SSMS*	Gross α & β	Specific Isotopes	Leaching	Organic	Bioassay	ICP
FS- 9	Lignite		●	●										
FS- 11	Lignite		●	●										
FS- 21	Lignite		●	●	●	●		●	●	●				
FS- 24	Lignite		●	●										
FS- 50	Lignite		●	●										
FS- 72	Lignite		●	●										
FS- 15	Gasifier Ash		●	●	●	●		●	●	●	●	●	●	●
FS- 47	Gasifier Ash													
FS- 61	Gasifier Ash													
FS- 70	Gasifier Ash													
FS- 20	Cyclone Dust		●	●	●	●		●	●	●	●	●	●	●
FS- 28	Cyclone Dust													
FS- 33	TB SASS XAD Resin							●				●		
FS- 34	TB SASS Cyclone							●				●		
FS-145	TB SASS Filter													
FS-170	PG Filter	Extract with CH_2Cl_2 and composite with solids from FS-75, FS-144, FS-168						●						●
FS-171	PG Filter													

* Includes Hg, As, Sb, Se by AA.
TB: Test Burner.
PG: Product Gas.
Log numbers correspond to the sample log given in Appendix B.

Figure 3-4. Analysis Matrix for Solid Samples

Sample		Analyses										
Log Number	Description	BOD	pH, COD	TDS, TSS	TOC	Anions	Phenols	Ammonia	Cyanide	SSMS*	ICP	
FS- 5	Gasifier Ash Sluice Water	•			•							
FS- 5	Cyclone Quench Water											
FS-26	Cyclone Quench Water	•			•							
FS-12	Gasifier Ash Sluice Water											
FS-43	Gasifier Ash Sluice Water						•					
FS-51	Gasifier Ash Sluice Water											
FS-66	Gasifier Ash Sluice Water											
FS-13	Gasifier Ash Sluice Water											
FS-45	Gasifier Ash Sluice Water									•	•	
FS-52	Gasifier Ash Sluice Water											
FS-68	Gasifier Ash Sluice Water											
FS-14	Gasifier Ash Sluice Water											
FS-46	Gasifier Ash Sluice Water		•	•	•	•		•	•			
FS-53	Gasifier Ash Sluice Water											
FS-67	Gasifier Ash Sluice Water											
FS-17	Cyclone Quench Water						•					
FS-25	Cyclone Quench Water											
FS-18	Cyclone Quench Water									•	•	
FS-19	Cyclone Quench Water		•	•	•	•		•	•			
FS-27	Cyclone Quench Water											
FS-16	Service Water									•		

Figure 3-5. Analysis Matrix for Liquid Samples

Sample		Analyses										
Log Number	Description	BOD	pH, COD	TDS, TSS	TOC	Anions	Phenols	Ammonia	Cyanide	SSMS*	ICP	
	Ash Leachate	•	•	•	•	•	•	•	•	•		
	Cyclone Dust Leachate	•	•	•	•	•	•	•	•	•		
FS-38	TB SASS Impingers									•		
FS-39	TB SASS Impingers											
FS-40	TB SASS Impingers									•		
FS-77	PG TM Impingers											
FS-78	PG TM Impingers									•		
FS-79	PG TM Impingers											
FS-80	PG TM Impingers									•		
FS-81	PG TM Impingers											
82-84	Metal Carbonyl Impingers											Fe, Ni
85-88	Total Sulfur Impinger-KOH											Total S
89-93	Total Sulfur Impinger-H_2O_2											Total S
94-99	Total Sulfur Impinger-Zn Acetate											Total S
100-120	Ammonia Impinger-H_2SO_4											NH_3
121-139	Cyanide Impinger-NaOH											HCN
FS-167	$Ag_2S_2O_8$ Blank									•		
FS-168	PG Probe Rinse											
FS-144	PG ESP Tar } CH_2Cl_2 Composite Extracts									•		
FS-75	PG ESP Rinse }											

*Includes Hg, As, Sb and Se by AA.

TB: Test Burner.

PG: Product Gas.

Log numbers correspond to the sample log given in Appendix B.

Figure 3-5. Analysis Matrix for Liquid Samples (Continued)

TABLE 3-5. COMPARISON OF ICP[1] AND SSMS[2] DATA FOR LIQUIDS

Element	Gasifier Ash Sluice Water		Cyclone Dust Quench Water	
	SSMS	ICP	SSMS	
Lead	0.008	<.07	0.02	0.10
Barium	0.1	0.14	0.002	0.57
Tin	<.001	3.0	<.001	2.9
Cadmium	<.002	<.005	<.001	<.005
Silver	0.001	<.005	<.002	<.005
Molybdenum	0.1	0.31	<.004	<.04
Strontium	4.0	4.6	2.0	1.1
Arsenic	0.009	0.080	0.05	<.08
Zinc	0.05	0.044	0.06	0.035
Copper	0.01	0.017	0.02	0.012
Nickel	0.02	<.02	0.08	<.02
Cobalt	<.002	<.15	0.009	<.15
Iron	0.5	1.2	2.0	4.9
Manganese	0.005	0.002	0.005	<.001
Chromium	0.009	0.007	0.01	<.005
Vanadium	0.02	0.077	0.02	0.045
Titanium	0.05	0.044	0.06	0.18
Calcium	>10	220	>10	54
Aluminum	> 1	11	> 1	11
Magnesium	5	11	1	11
Sodium	> 3	1720	> 3	220
Boron	0.2	4.6	0.09	0.99

All values in µg/ml.

[1]ICP: Inductively Coupled Argon Plasma Emission Spectrometry.

[2]SSMS: Spark Source Mass Spectrometry.

TABLE 3-6. COMPARISON OF ICP[1] AND SSMS[2] DATA FOR SOLIDS

	Cyclone Dust		Gasifier Ash		Product Gas Particulates	
	SSMS	ICP	SSMS	ICP	SSMS	ICP
Lead	8	<87	5	<87	39	<87
Barium	>1000	2290 ± 25	>1000	210 ± 10	>1000	2320 ± 10
Tin	2	<50	0.5	1200 ± 20	4	<50
Cadmium	2	<6	0.8	<6	3	85± 3
Silver	2	<6	0.6	<6	30	NA
Molybdenum	2	<50	15	50 ± 1	3	<50
Strontium	>1000	1180 ± 10	>1000	1290 ± 10	>1000	1200 ± 10
Arsenic	46	<6	9	98 ± 1	89	<100
Zinc	160	40 ± 6	20	15 ± 10	70	140 ± 6
Copper	30	<6	81	25 ± 8	110	76 ± 6
Nickel	4	<25	75	67 ± 4	35	<33
Cobalt	5	<180	23	<180	4	<180
Iron	>1000	7730 ± 100	>1000	30300 ± 200	>1000	10300 ± 200
Manganese	20	18 ± 4	170	64 ± 1	13	35 ± 2
Chromium	11	<6	100	21 ± 1	27	40 ± 11
Vanadium	19	<12	410	<12	11	<13
Titanium	470	310 ± 10	>1000	310 ± 7	550	290 ± 10
Calcium	>1000	44000 ± 350	>1000	48500 ± 400	>1000	44900 ± 300
Aluminum	>1000	7100 ± 100	>1000	19000 ± 100	>1000	8370 ± 40
Magnesium	>1000	12200 ± 100	>1000	12300 ± 100	>1000	12200 ± 200
Sodium	>1000	<6200	>1000	<6200	>1000	6350 ± 150
Boron	75	110 ± 5	320	210 ± 10	200	170 ± 5

All values in μg/g ± 2σ (where available).
NA = Not Analyzed.

[2]SSMS: Spark Source Mass Spectrometry.
[1]ICP: Inductively Coupled Argon Plasma Emisssion Spectrometry.

TABLE 3-7. VOLATILE METAL COMPARISON

Stream	Method	Arsenic	Antimony	Selenium	Mercury
Cyclone Dust	AA	64	<0.4	13	2.1
	SSMS	46	3	5	NA
	ICP	<6	NA	NA	NA
Gasifier Ash	AA	<6.5	2	0.01	0.39
	SSMS	9	<0.1	4	NA
	ICP	98	NA	NA	NA
Product Gas Particulates	AA	77	<0.4	15	2.6
	SSMS	89	2	3	NA
	ICP	<100	NA	NA	NA
Gasifier Ash Sluice Water	AA	0.33	<0.06	0.02	0.0014
	SSMS	0.009	0.002	0.005	NA
	ICP	0.08	NA	NA	NA
Cyclone Dust Quench Water	AA	0.12	<0.06	0.03	0.0004
	SSMS	0.05	<0.001	0.006	NA
	ICP	<0.08	NA	NA	NA

As ppm, solids µg/g; liquids µg/ml.

NA: Not analyzed.

SSMS: Spark Source Mass Spectrometry.

ICP: Inductively Coupled Argon Plasma Emission Spectrometry.

AA: Atomic Absorption Spectrometry.

For solids, the added extraction efficiency of ether is somewhat variable as shown in Table 3-8. The greater percentages of added efficiency correspond to TCO increases and, with the exception of the product gas particulates, none of the solids would be expected to retain TCO material. Since the product gas particulates were collected with an ESP at 140°C (285°F) instead of 200°C (400°F), some additional TCO material would be anticipated. The added extraction efficiency on the GRAV portions indicates that the particulates may have contained tarry material that was more soluble in the ether.

Liquid samples show the widest range of variability for the added extraction efficiency of ether. From the data in Table 3-9, there is no real advantage to the ether extractions for TCO material. It is clear though that the GRAV material recovery was enhanced by the ether extraction. From these data, following the methylene chloride extraction with ether extraction is recommended for added recovery efficiency for both solids and liquids.

Addition of an ether extraction step does not pose a problem for the liquid chromatography solvent exchanges due to the high volatility of ethyl ether. However, ether is often difficult to obtain at adequate purity for extraction and greater than 100-fold concentrations. Distilled-in-glass quality ether sometimes requires additional clean-up prior to use due to the presence of ethyl acetate.

TABLE 3-8. ADDED EXTRACTION EFFICIENCY USING ETHYL ETHER FOR SOLIDS

	TCO		GRAV		Added Efficiency	
	CH_2Cl_2	Et_2O	CH_2Cl_2	Et_2O	TCO	GRAV
Gasifier Ash (mg/kg)	18.5	2.57	526	38	12%	7%
Cyclone Dust (mg/kg)	163	60.2	1110	820	28%	7%
Test Burner Particulates (µg/SCM)	24.3	8.43	647	333	26%	34%
Product Gas Particulates (mg/SCM)	1.13	0.31	182	57.5	21%	24%
Product Gas Resin (mg/SCM)	2050	24	290	13	1%	4%

SCM at 25°C (77°F) and 101 kPa (1 atm), dry basis.

$$\text{Added Efficiency (\%)} = \frac{\text{Ether Extractable Mass}}{\text{Total Extractable Mass}} \times 100$$

TABLE 3-9. ADDED EXTRACTION EFFICIENCY USING ETHYL ETHER FOR LIQUIDS

	pH=2		pH=12		Added Efficiency	
	CH_2Cl_2	Et_2O	CH_2Cl_2	Et_2O	pH=2	pH=12
TCO (in mg/l)						
Gasifier Ash Sluice Water	4.16	ND	9.38	0.17	0%	2%
Cyclone Dust Quench Water	ND	ND	3.31	ND	-	0%
GRAV (in mg/l)						
Gasifier Ash Sluice Water	63.2	44.5	ND	4.3	41%	100%
Cyclone Dust Quench Water	23.2	14.6	12.2	2.6	39%	18%

ND = less than 0.001 mg/ℓ detected.

$$\text{Added Efficiency (\%)} = \frac{\text{Ether Extractable Mass}}{\text{Total Extractable Mass}} \times 100$$

3.3 DETAILED ORGANIC ANALYSIS APPROACH

The fundamental objective of the detailed organic analysis approach followed on this project was the generation of data for process and effluent streams which would allow an assessment of the potential environmental and health effects of a stream by comparison to the discharge multimedia environmental goals (DMEG) for specific compounds (Ref. 4,5, and 6). To achieve this objective in the most comprehensive manner for specific organic compounds would be extremely expensive. Therefore, a phased logic sequence was followed to provide a means of prioritizing streams, fractions within each stream, and classes of compounds and specific compounds within each fraction. The logic sequence was intended to utilize techniques to eliminate as many compounds as possible from consideration in the compound-specific detailed analysis by insuring that they are not present at concentrations greater than their respective DMEG values.

The data from the preliminary screening analysis were used to eliminate from consideration as many classes of compounds or specific compounds for which DMEG values were available prior to the detailed analysis. This step simultaneously reduced the scope of the detailed analysis and prioritized the samples on the basis of weighted discharge severity (WDS) for further analysis. The decision criteria were based on worst case DMEG values for specific compounds which were potentially present.

The logic sequence implemented contained these decision elements:

1. With all available information about the stream such as process data, on-site analysis results, ultimate and proximate analyses, can any possible reduction in DMEG compounds or classes of compounds be made?

2a. With the determination of extractable organic content by total chromatographable organics (TCO) and gravimetric (GRAV) content, can any reduction be made on the basis of a Discharge Severity <1?

2b. With the infrared analysis data, can a reduction of compound classes be made on the basis of key functional group absence?

3. After fractionation of a sample by a separation scheme for which there are established relationships between compound classes and individual fraction, do the TCO and GRAV determinations in conjunction with the predicted compound class/fraction relationship reduce the number of compounds of concern?

4. On the basis of the infrared analysis for each LC fraction, can an elimination of compound classes be made? Must other compound classes not predicted by the LC relationship be introduced into consideration?

5. If the preceding decision criteria eliminate the possibility of hazardous materials, do the bioassay results indicate that a hazard not covered by the DMEG listings is present?

This phased logic sequence is presented graphically in Figure 3-6.

The detailed organic analysis approach implemented here was compound specific only for those compounds in the DMEG listings. Prioritization was done on the worst case basis which meant that the calculated total organic loading for a sample or an LC fraction was all assumed to be the specific compound having the lowest DMEG value in each predicted category. The specific analysis focused on:

- quantification of the first priority compound,
- calculating a new prioritization in case the second worst compound in that category might have a higher priority than the first priority compound from the next compound category of interest, and
- quantification of the next priority compound.

The necessary ranking between samples was done on a flow rate weighing, so the actual analysis prioritization was based on weighted discharge severity, where:

$$\frac{dc_{tot}}{DMEG} = DS$$

and,

$$DS \times mr = WDS.$$

where:

dc_{tot} = discharge concentration of the measured total organic loading as the sum of TCO and GRAV

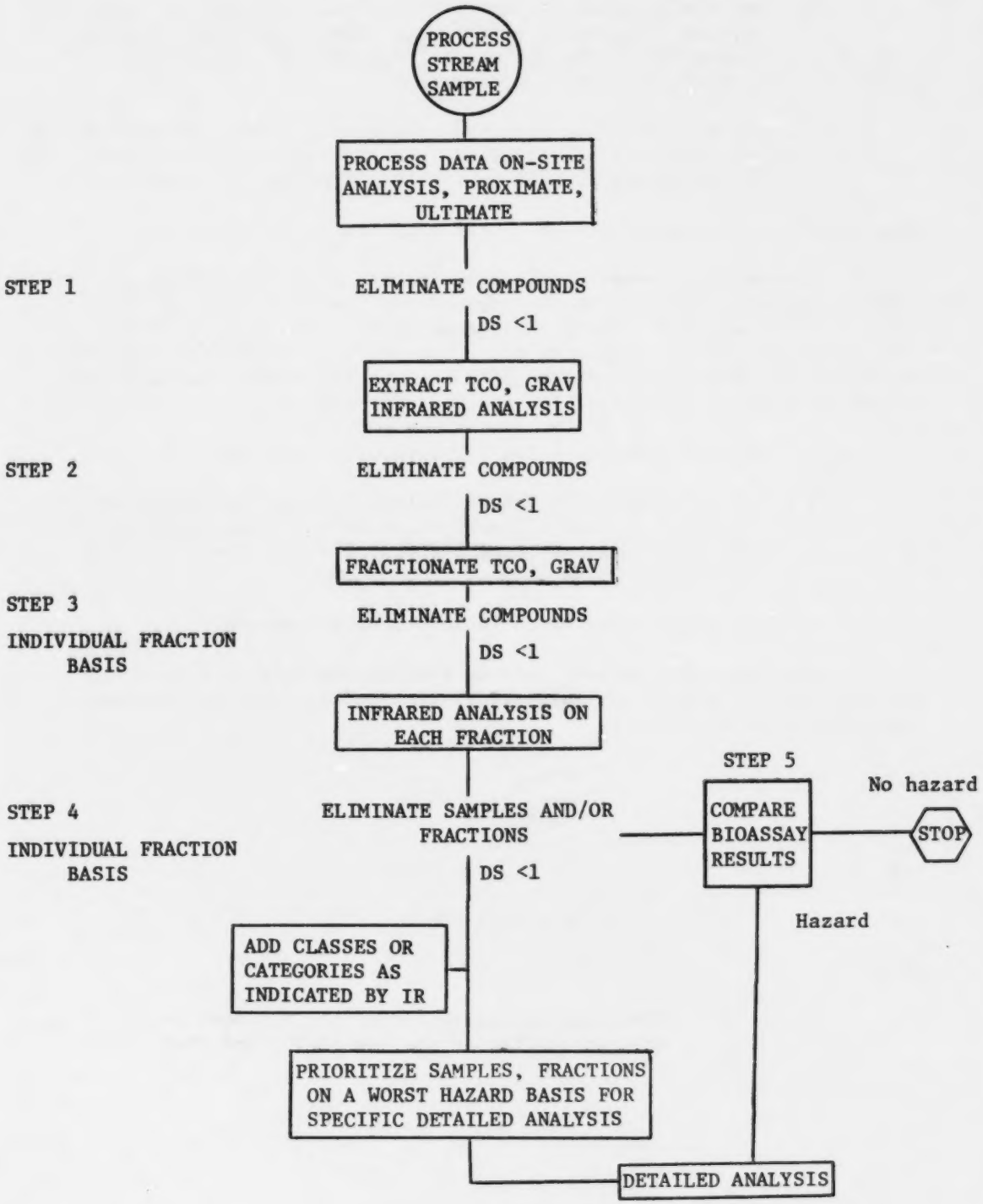


Figure 3-6. Organic Analysis Prioritization Logic Sequence

DMEG = discharge multimedia environmental goal, used here as the appropriate worst case value for each classs of compounds

DS = discharge severity

mr = mass flow rate of the stream analyzed

WDS = weighted discharge severity for each stream analyzed

3.3.1 Specific Ion Monitoring GC/MS

The method chosen for the detailed analysis was specific ion monitoring (SIM) gas chromatography/mass spectrometry (GC/MS). With this technique, the appearance of characteristic compound specific ions is monitored within known retention time windows for the compound of interest. In order to get confirmation for the designate compound:

- the primary ion must be present,
- the secondary ion must be present,
- both ions must be maximized at the correct retention time for the designated compound.

In as many cases as possible, standards of the designated compounds were obtained and their mass spectra and retention times were verified prior to analysis. Compounds for which no standards were available were monitored on the basis of characteristic ions from the literature during the entire mass spectrometer run time. An example of the specific ion monitoring technique is given in Figure 3-7, which shows a SIM GC/MS analysis for benzo(b)fluoranthene. The figure shows both the more intense primary ion, m/e = 252, and the secondary ion, m/e = 250, maximized at 35.0 minutes which was the established retention time for benzo(b)fluoranthene. Since all three confirmation criteria were met, the probability of correct identification was enhanced. The instrumental parameters for this analysis are given in Appendix C.

Specific ion monitoring GC/MS was chosen as the primary detailed analysis technique because it generates compound specific information which is required to implement the analysis approach concept. To obtain the same degree of compound specific information from a scanning GC/MS analysis, every peak in the total ion plot would have to be identified. The effort required for the identification of all the compounds eluting from the GC column would be prohibitive in this source test and evaluation program.

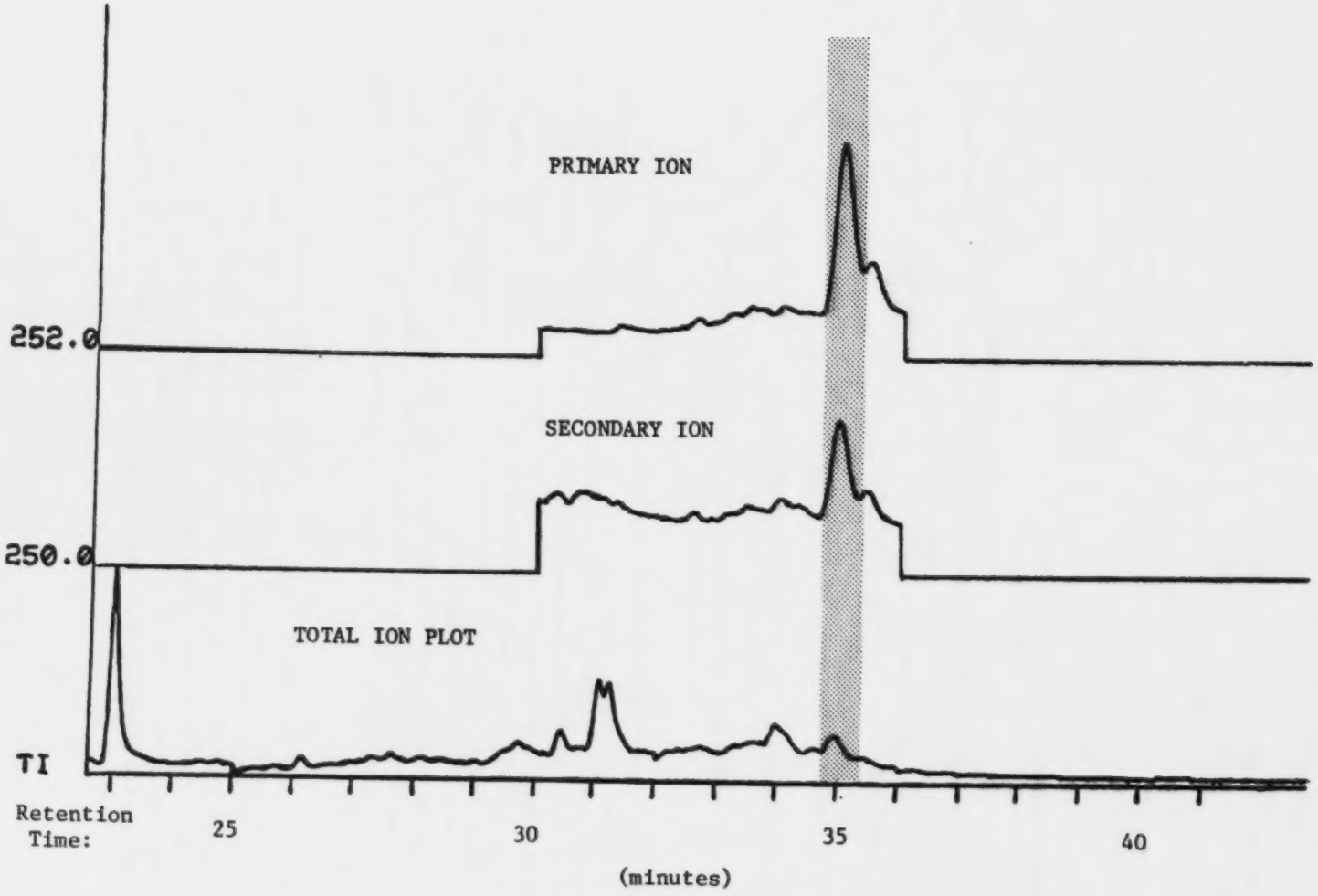


Figure 3-7 . Specific Ion Monitoring Plot for Benzo(b)fluoranthene

To identify the major components of a GC/MS scan gives a better overall view of the process stream components, but does not address the problems of extremely hazardous compounds present at very low concentrations as does SIM GC/MS. Low resolution mass spectrometry using the direct probe for sample injection also gives a better overall view of the process stream than SIM GC/MS, but has specificity deficiencies.

3.3.2 Halogen Specific Gas Chromatography

As an adjunct to the detailed analysis technique, a halogen-specific analysis was done prior to SIM GC/MS. This analysis was designed to give quantitative information about the compounds and classes of compounds that contain halogen moieties, since halogenated organic compounds are among the most hazardous in the DMEG listings. Aliquots of the unfractionated samples were analyzed by gas chromatography using a Hall electrolytic conductivity detector in the halogen-specific mode according to the procedure given in Appendix C.

3.4 QUALITY ASSURANCE

To provide quality assurance for the on-site analyses, certified gas standards and standard solutions were analyzed during the sampling effort. Also, GC samples were analyzed in duplicate on-site. During the on-site sampling, an evaluation of the affect the electrostatic precipitator had on the gas stream composition was made. No trends or indications of sample degradation were observed. The planned evaluation of trace element train collection efficiencies was not conducted due to process operational difficulties.

The samples which were not analyzed on-site were preserved according to the recommended procedures (Ref. 3). Liquid samples that had short lifetimes were returned for laboratory analysis within the preservation time limits. All samples were logged on-site and the log data entries were cross-verified upon receipt in the laboratory. The on-site log is presented in Appendix B of this document.

Solvent blanks, impinger solution blanks, and blank XAD-2 resin were analyzed in the laboratory and included in the appropriate subcontracted analyses. LC columns were run using a blank XAD-2 resin extract and solvent blanks from designated solvent lots. The same solvent lots were used throughout the organic analysis, and blanks were analyzed by IR as well as TCO and GRAV. TCO blanks were analyzed within each set of TCO determinations. An infrared spectrum of the blank XAD-2 resin extract is given in Appendix D for purposes of comparison with the infrared spectrum of XAD-2 sample extracts.

The EPA Water Quality control sample #3 was analyzed by ICP to provide the accuracy data for the method. Table 3-10 presents the comparison of the reported value and the Radian ICP value. Most values were within experimental errors. Arsenic and lead were above the prescribed level. This is due to the misalignment of the analytical lines of these elements on the present instrument.

Prior to the thermal desorption GC/MS analysis of the Tenax trap, a blank run was made to assure that no instrument contamination was present. Hexadeuterobenzene was used as an internal standard for the thermal desorption GC/MS analysis, and d_{10}-anthracene was used as the internal standard for the SIM GC/MS quantification.

TABLE 3-10. COMPARISON OF RADIAN ICP DATA AND REPORTED VALUES FOR EPA WATER QUALITY CONTROL SAMPLE #3

Element	Reported µg/ml	Radian µg/ml
Aluminum	0.904	1.15
Arsenic	0.154	0.301
Cadmium	0.073	0.083
Cobalt	0.396	0.547
Chromium	0.209	0.238
Copper	0.102	0.114
Iron	0.678	0.760
Manganese	0.397	0.425
Lead	0.352	0.546
Vanadium	0.157	0.186
Zinc	0.174	0.206

SECTION 4

RESULTS

An overview of the Source Analysis Model/1A results, the bioassay results, and the analytical results is contained in the following sections. Detailed tabulations of all data produced are provided in the appendices.

4.1 Source Analysis Model/1A Results

The Source Analysis Model/1A (Ref. 7) was used to provide a rapid screening technique for identifying and prioritizing potentially harmful waste streams. Major simplifying assumptions implicit in the use of the Source Analysis Model/1A (SAM/1A) methodology are:

- The substances currently in the Multimedia Environmental Goals (MEG) lists (Ref. 4, 5 and 6) are the only ones that must be addressed at this time (the MEG's are currently being updated to include new data, account for new or revised standards, and add new compounds).

- Transport of the components in the waste streams to the external environment occurs without chemical or physical transformation of those components.

- Actual dispersion of a pollutant from a source to a receptor will be equal to, or greater than the safety factors normally applied to acute toxicity data to convert these data to estimated safe chronic exposure levels.

- Discharge Multimedia Environmental Goals (DMEG) values (Ref. 4, 5, and 6) developed for each substance are adequate for estimating acute toxicity. A DMEG is a concentration of a substance estimated to cause an adverse effect in a health receptor exposed once or intermittently for short periods. It relates either to human health or ecological effects.

- The waste stream components cause no synergistic effects.

These assumptions, along with the accuracy of the test data and assumptions used in developing DMEG values, must be considered when interpreting test results using a SAM/1A analysis scheme.

In addition to the assumptions inherent in the SAM/1A, the summarized SAM/1A results given are based on these postulates:

- All streams are treated as if they were emission streams, and the flow rates are used for weighted discharge severity (WDS) calculations.

- The compounds or elements identified by a specific method preempt any screening results such as SSMS or LC.

- The maximum potential concentration of an organic compound not specifically identified is taken as the sum of the TCO and GRAV concentration of the established LC fraction.

The SAM/1A results calculated at the end of the organic screening analysis were used to prioritize LC fractions for specific ion monitoring (SIM) GC-MS. Using the established correlation between LC fractions and organic categories in the MEG listings (Ref. 8), the categories that could be present in each fraction were determined. Potential worst case weighted discharge severity (WDS) factors were then calculated for each LC fraction by assuming that the total organic loading (TCO + GRAV) is present as the worst case compound (smallest DMEG value) in the categories potentially present. These worst case weighted discharge severity factors were as shown in Figure 4-1. The detailed analysis then focused on those organic compounds potentially present which would generate WDS factors from 10^{10} to 10^{7}. Utilizing this approach exerted a leveling effect on the resulting WDS factors.

The actual concentrations of specific organic compounds, as determined by SIM/GC-MS during the detailed analysis, were significantly less than the maximum potential concentration. The highest specific WDS for any stream, calculated from measured concentrations of specific compounds, is less than 10^{8}. The SAM/1A results given in the Tables (4-1 to 4-14) are for the highest WDS factors from each stream and include both experimentally verified compounds and remaining worst case assumptions. The summations of these WDS factors to give total WDS for each stream are given in Table 4-15 for both the health and ecological effects. The analogous discharge severity (DS) summations are also given in the table. Further expenditure of effort to eliminate the remaining worst case assumptions could lower these WDS and DS factors even more.

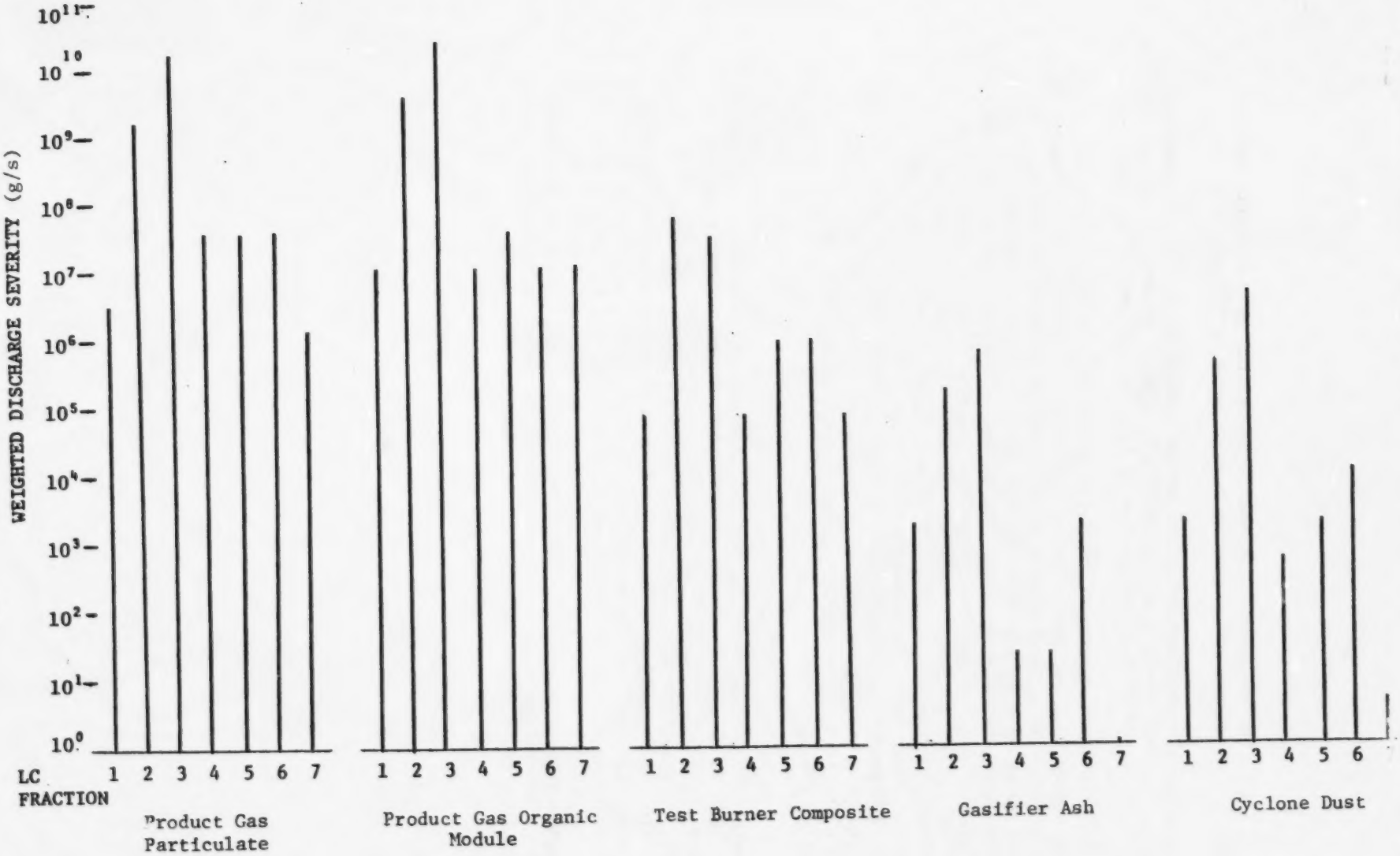


FIGURE 4-1. Worst Case Weighted Discharge Severity Summary Based on Screening Analysis Results Only

NOTES FOR THE FOLLOWING TABLES: 4-1 to 4-14

P = compound is on Priority Pollutant List

V = compound is the worst case within the appropriate matrix for that category/subcategory

T = concentration is total organic loading (TCO + GRAV) for the LC fraction

S = concentration is from SSMS

D = concentration is determined experimentally; from on-site analysis, SIM-GC/MS, Anion/Cation analysis ICP or AAS

Conc = concentration in µg/SCM at 25°C (77°F) and 101 kPa (1 atm) dry basis, for gases; µg/l (ppb) for liquids; and µg/g (ppm) for solids

WDS = units are g/s for all streams

LCCAT = established LC fraction if applicable

* = indicates that the compound appears more than once in the listing, i.e. in more than one LC fraction

TABLE 4-1. PRODUCT GAS PARTICULATE/TAR MAJOR CONTRIBUTIONS TO DS AND WDS FOR HEALTH EFFECTS INCLUDING WORST CASE ASSUMPTIONS

PRODUCT GAS PARTICULATE, HEALTH IMPACT

DMEG NO.				COMPOUND NAME	TYPE	CONC E-6 G/SCM	DS	WDS G/S	LCCAT
04 B 020*	P	W		1,1'-DICHLOROMETHYL ETHER	T	4.90E 05	9.80E 04	5.80E 07	5
04 B 020*	P	W		1,1'-DICHLOROMETHYL ETHER	T	4.10E 05	8.20E 04	4.83E 07	4
10 C 100*				1,4-DIAMINOBENZENE	T	3.60E 06	3.60E 04	2.12E 07	6
10 C 043*				4-AMINOTOLUENE	T	3.60E 06	3.30E 04	1.93E 07	6
10 C 041*				2-AMINOTOLUENE	T	3.60E 06	3.30E 04	1.93E 07	6
10 C 042*				3-AMINOTOLUENE	T	3.60E 06	3.30E 04	1.93E 07	6
12 A 040*	P			N-NITROSODIETHYLAMINE	T	3.60E 06	3.00E 04	1.80E 07	6
10 C 220*				2-AMINONAPHTHALENE	T	3.60E 06	2.11E 04	1.24E 07	6
20 B 041*				3,5-DINITRO-P-CRESOL	T	3.60E 06	1.80E 04	1.10E 07	6
20 B 020*	P	W		4,6-DINITRO-O-CRESOL	T	3.60E 06	1.80E 04	1.10E 07	6
20 B 042*				2,6-DINITRO-P-CRESOL	T	3.60E 06	1.80E 04	1.10E 07	6
21 C 100*	P	W		BENZO(A)PYRENE	D	1.90E 02	9.50E 03	5.60E 06	3
02 B 140*	P	W		HEXACHLOROCYCLOPENTADIENE	T	8.70E 05	7.90E 03	4.70E 06	1
10 C 082*				M-ANISIDINE	T	3.60E 06	7.20E 03	4.24E 06	6
10 C 083*				P-ANISIDINE	T	3.60E 06	7.20E 03	4.24E 06	6
10 C 080*				ANISIDINES	T	3.60E 06	7.20E 03	4.24E 06	6
10 C 081*				O-ANISIDINE	T	3.60E 06	7.20E 03	4.24E 06	6
19 A 060*	P	W		PENTACHLOROPHENOL	T	3.60E 06	7.20E 03	4.24E 06	6
13 A 100*		W		BENZENETHIOL	T	3.60E 06	7.20E 03	4.24E 06	6
10 C 200*				1-AMINONAPHTHALENE	T	3.60E 06	6.42E 03	3.80E 06	6
23 C 160*		W		DIBENZO(C,G)CARBAZOLE	T	4.90E 05	4.90E 03	2.90E 06	5
10 C 100*				1,4-DIAMINOBENZENE	T	4.90E 05	4.90E 03	2.90E 06	5
13 A 140*				PERCHLOROMETHANETHIOL	T	3.60E 06	4.50E 03	2.70E 06	6
10 C 042*				3-AMINOTOLUENE	T	4.90E 05	4.50E 03	2.62E 06	5
10 C 043*				4-AMINOTOLUENE	T	4.90E 05	4.50E 03	2.62E 06	5
10 C 041*				2-AMINOTOLUENE	T	4.90E 05	4.50E 03	2.62E 06	5
23 C 160*		W		DIBENZO(C,G)CARBAZOLE	T	4.10E 05	4.10E 03	2.41E 06	4
12 A 040*	P			N-NITROSODIETHYLAMINE	T	4.90E 05	4.10E 03	2.40E 06	5
08 A 122*				PALMITIC ACID	T	3.60E 06	3.60E 03	2.12E 06	6
10 C 140*	P			BENZIDINE	T	3.60E 06	3.60E 03	2.12E 06	6
08 A 121*				MYRISTIC ACID	T	3.60E 06	3.60E 03	2.12E 06	6
08 A 123*				STEARIC ACID	T	3.60E 06	3.60E 03	2.12E 06	6
08 A 120*		W		SATURATED LONG CHAIN ACIDS (MW:228-285)	T	3.60E 06	3.60E 03	2.12E 06	6
08 C 060*		W		6-HEXANELACTAM	T	3.60E 06	3.60E 03	2.12E 06	6

TABLE 4-2. PRODUCT GAS PARTICULATE/TAR MAJOR CONTRIBUTIONS TO DS AND WDS FOR ECOLOGICAL EFFECTS INCLUDING WORST CASE ASSUMPTIONS

PRODUCT GAS PARTICULATE, ECOLOGY IMPACT

DMEG NO.	COMPOUND NAME	TYPE	CONC E-6 G/SCM	DS	WDS G/S	LOCAT
83 A 010 P	MERCURY	D	6.50E 03	6.50E 02	3.83E 05	
15 A 120*	ISOPROPYL BENZENE	T	6.80E 05	5.70E 02	3.34E 05	3
15 A 040* P	TOLUENE	T	6.80E 05	1.50E 02	8.72E 04	3
15 A 120*	ISOPROPYL BENZENE	T	8.90E 04	7.41E 01	4.40E 04	2
65 A 010	VANADIUM	S	3.60E 01	3.60E 01	2.12E 04	
15 A 040* P	TOLUENE	T	8.90E 04	1.95E 01	1.14E 04	2
01 B 080	BUTADIENES	T	8.70E 05	4.00E-01	2.33E 02	1
01 B 060	BUTYLENES	T	8.70E 05	3.80E-02	2.23E 01	1
16 A 220*	POLYCHLORINATED BIPHENYLS	D	< 7.60E 00<	0.00E-01<	0.00E-01	2
22 C 080* P	BENZO(B)FLUORANTHENE	D	1.00E 01	0.00E-01	0.00E-01	2
21 C 100* P	BENZO(A)PYRENE	D	0.00E-01	0.00E-01	0.00E-01	2
16 A 220*	POLYCHLORINATED BIPHENYLS	D	0.00E-01	0.00E-01	0.00E-01	3
21 B 060*	7,12-DIMETHYLBENZ(A)ANTHRACENE	D	1.60E 02	0.00E-01	0.00E-01	3
22 C 080* P	BENZO(B)FLUORANTHENE	D	3.70E 02	0.00E-01	0.00E-01	3
21 B 100*	BENZO(C)PHENANTHRENE & ALKYL DERIVATIVES	D	0.00E-01	0.00E-01	0.00E-01	2
21 B 060*	7,12-DIMETHYLBENZ(A)ANTHRACENE	D	0.00E-01	0.00E-01	0.00E-01	2
21 C 100* P	BENZO(A)PYRENE	D	1.90E 02	0.00E-01	0.00E-01	3
21 D 040*	DIBENZO(A,I)PYRENE	D	0.00E-01	0.00E-01	0.00E-01	2
21 C 080* P	DIBENZ(A,H)ANTHRACENE	D	6.10E 00	0.00E-01	0.00E-01	3
17 B 040	1-CHLORO-2-NITROBENZENE	D	0.00E-01	0.00E-01	0.00E-01	4
21 B 080*	3-METHYLCHOLANTHRENE	D	0.00E-01	0.00E-01	0.00E-01	2
21 C 080* P	DIBENZ(A,H)ANTHRACENE	D	0.00E-01	0.00E-01	0.00E-01	2
03 B 060	2-ETHYL-4-METHYL-1,3-DIOXOLANE	D	0.00E-01	0.00E-01	0.00E-01	4
09 A 120	TETRAMETHYLSUCCINONITRILE	D	0.00E-01	0.00E-01	0.00E-01	4
25 B 040	BENZO(B)THIOPHENE	D	0.00E-01	0.00E-01	0.00E-01	4
09 B 020	BENZONITRILE	D	0.00E-01	0.00E-01	0.00E-01	4
12 A 020* P	N-NITROSODIMETHYLAMINE	D	0.00E-01	0.00E-01	0.00E-01	5
10 C 040*	AMINOTOLUENES	D	0.00E-01	0.00E-01	0.00E-01	5
08 B 060*	B-PROPIOLACTONE	D	0.00E-01	0.00E-01	0.00E-01	5
20 A 120*	2,4,6-TRINITROPHENOL	D	0.00E-01	0.00E-01	0.00E-01	5
20 B 040*	DINITRO-P-CRESOLS	D	8.40E 02	0.00E-01	0.00E-01	5
23 B 100*	DIHYDROACRIDINE	D	2.30E 01	0.00E-01	0.00E-01	5
23 B 220*	DIBENZ(A,J)ACRIDINE	D	0.00E-01	0.00E-01	0.00E-01	5
23 B 240*	DIBENZ(A,H)ACRIDINE	D	0.00E-01	0.00E-01	0.00E-01	5

TABLE 4-3. PRODUCT GAS ORGANIC MODULE MAJOR CONTRIBUTIONS TO DS AND WDS FOR HEALTH EFFECTS INCLUDING WORST CASE ASSUMPTIONS

PRODUCT GAS ORGANIC MODULE COMPOSITE, HEALTH IMPACT

OMEG NO.			COMPOUND NAME	TYPE	CONC E-6 G/SCM	DS	WDS G/S	LCCAT
04 B 020*	P	W	1,1'-DICHLOROMETHYL ETHER	T	5.70E 05	1.14E 05	6.72E 07	5
04 B 020*	P	W	1,1'-DICHLOROMETHYL ETHER	T	1.30E 05	2.60E 04	1.53E 07	4
02 B 140*	P	W	HEXACHLOROCYCLOPENTADIENE	T	1.60E 06	1.50E 04	8.60E 06	1
12 A 020*	P	W	N-NITROSODIMETHYLAMINE	T	7.10E 05	1.10E 04	6.44E 06	6
08 B 060*		W	B-PROPIOLACTONE	T	2.50E 06	7.81E 03	4.60E 06	7
42 A 070			CARBON MONOXIDE	D	3.00E 08	7.50E 03	4.42E 06	
20 A 120*		W	2,4,6-TRINITROPHENOL	T	7.10E 05	7.10E 03	4.20E 06	6
10 C 100*			1,4-DIAMINOBENZENE	T	7.10E 05	7.10E 03	4.20E 06	6
10 C 040*			AMINOTOLUENES	T	7.10E 05	6.50E 03	3.80E 06	6
10 C 043*			4-AMINOTOLUENE	T	7.10E 05	6.50E 03	3.80E 06	6
10 C 042*			3-AMINOTOLUENE	T	7.10E 05	6.50E 03	3.80E 06	6
10 C 041*			2-AMINOTOLUENE	T	7.10E 05	6.50E 03	3.80E 06	6
12 A 040*	P		N-NITROSODIETHYLAMINE	T	7.10E 05	5.91E 03	3.50E 06	6
10 C 100*			1,4-DIAMINOBENZENE	T	5.70E 05	5.70E 03	3.40E 06	5
23 C 160*		W	DIBENZO(C,G)CARBAZOLE	T	5.70E 05	5.70E 03	3.40E 06	5
10 C 041*			2-AMINOTOLUENE	T	5.70E 05	5.20E 03	3.10E 06	5
10 C 043*			4-AMINOTOLUENE	T	5.70E 05	5.20E 03	3.10E 06	5
10 C 042*			3-AMINOTOLUENE	T	5.70E 05	5.20E 03	3.10E 06	5
12 A 040*	P		N-NITROSODIETHYLAMINE	T	5.70E 05	4.80E 03	2.80E 06	5
23 B 100*		W	DIHYDROACRIDINE	T	7.10E 05	4.43E 03	2.61E 06	6
10 C 220*			2-AMINONAPHTHALENE	T	7.10E 05	4.20E 03	2.50E 06	6
20 B 042*			2,6-DINITRO-P-CRESOL	T	7.10E 05	3.60E 03	2.10E 06	6
20 B 041*			3,5-DINITRO-P-CRESOL	T	7.10E 05	3.60E 03	2.10E 06	6
20 B 020*	P	W	4,6-DINITRO-O-CRESOL	T	7.10E 05	3.60E 03	2.10E 06	6
20 B 040*		W	DINITRO-P-CRESOLS	T	7.10E 05	3.60E 03	2.10E 06	6
10 C 220*			2-AMINONAPHTHALENE	T	5.70E 05	3.40E 03	2.00E 06	5
23 B 240*			DIBENZ(A,H)ACRIDINE	T	7.10E 05	3.22E 03	1.90E 06	6
02 A 380*		W	HEXACHLOROCYCLOHEXANE	T	1.60E 06	3.20E 03	1.90E 06	1
14 B 020		W	DIMETHYL SULFOXIDE	T	2.50E 06	3.10E 03	1.82E 06	7
21 B 106*			7-METHYL BENZO(C)PHENANTHRENE	T	6.60E 05	3.00E 03	1.80E 06	3
21 B 102*			1-METHYL BENZO(C)PHENANTHRENE	T	6.60E 05	3.00E 03	1.80E 06	3
21 B 103*			2-METHYL BENZO(C)PHENANTHRENE	T	6.60E 05	3.00E 03	1.80E 06	3
21 B 108*			2-ETHYL BENZO(C)PHENANTHRENE	T	6.60E 05	3.00E 03	1.80E 06	3
21 B 107*			8-METHYL BENZO(C)PHENANTHRENE	T	6.60E 05	3.00E 03	1.80E 06	3

TABLE 4-4. PRODUCT GAS ORGANIC MODULE MAJOR CONTRIBUTIONS TO DS AND WDS FOR ECOLOGICAL EFFECTS INCLUDING WORST CASE ASSUMPTIONS

PRODUCT GAS ORGANIC MODULE COMPOSITE, ECOLOGY IMPACT

DMEG NO.		COMPOUND NAME	TYPE	CONC E-6 G/SCM	DS	WDS G/S	LCCAT
01 B 020	W	ETHYLENE	D	3.60E 05	3.60E 05	2.11E 08	
47 A 060	P	AMMONIA	D	1.10E 07	3.03E 04	1.80E 07	
42 A 070		CARBON MONOXIDE	D	3.00E 08	2.50E 03	1.50E 06	
15 A 120*		ISOPROPYL BENZENE	T	6.60E 05	5.50E 02	3.24E 05	3
15 A 120*		ISOPROPYL BENZENE	T	2.30E 05	1.91E 02	1.13E 05	2
15 A 020	P	BENZENE	D	> 1.30E 04>	1.80E 01>	1.10E 04	
47 A 080	P	HYDROGEN CYANIDE	D	2.22E 05	6.52E 00	3.90E 03	
01 A 020	W	METHANE	D	6.30E 06	9.64E-01	5.70E 02	
65 A 010		VANADIUM	S	9.20E-01	9.20E-01	5.42E 02	
01 B 080		BUTADIENES	T	1.60E 06	7.30E-01	4.30E 02	1
83 A 010	P	MERCURY	D	3.30E 00	3.30E-01	1.94E 02	
01 B 060		BUTYLENES	T	1.60E 06	7.00E-02	4.10E 01	1
01 A 040		ETHANE	D	7.90E 05	6.60E-02	3.90E 01	
15 A 040	P	TOLUENE	D	2.60E 02	5.70E-02	3.33E 01	
01 A 060		PROPANE	D	8.00E 05	4.44E-02	2.62E 01	
01 A 080		BUTANES	D	4.60E 05	1.90E-02	1.12E 01	
15 B 080		XYLENES	D	4.80E 01	0.00E-01	0.00E-01	
53 A 080		CARBONYL SULFIDE	D	3.51E 05	0.00E-01	0.00E-01	
25 A 020		THIOPHENE	D	1.90E 03	0.00E-01	0.00E-01	
42 A 080		CARBON DIOXIDE	D	1.71E 08	0.00E-01	0.00E-01	
53 A 060		SULFUR DIOXIDE	D	4.20E 04	0.00E-01	0.00E-01	
53 A 100		CARBON DISULFIDE	D	3.73E 04	0.00E-01	0.00E-01	
21 B 040*	P	BENZ(A)ANTHRACENE	D	8.10E 00	0.00E-01	0.00E-01	2
21 B 060*		7,12-DIMETHYLBENZ(A)ANTHRACENE	D	0.00E-01	0.00E-01	0.00E-01	2
21 D 040*		DIBENZO(A,I)PYRENE	D	0.00E-01	0.00E-01	0.00E-01	2
21 B 100*		BENZO(C)PHENANTHRENE & ALKYL DERIVATIVES	D	0.00E-01	0.00E-01	0.00E-01	2
15 A 060	P	ETHYL BENZENE	D	3.90E 01	0.00E-01	0.00E-01	
21 B 080*		3-METHYLCHOLANTHRENE	D	0.00E-01	0.00E-01	0.00E-01	2
21 C 080*	P	DIBENZ(A,H)ANTHRACENE	D	0.00E-01	0.00E-01	0.00E-01	2
22 C 080*	P	BENZO(B)FLUORANTHENE	D	0.00E-01	0.00E-01	0.00E-01	2
16 A 220*		POLYCHLORINATED BIPHENYLS	D	0.00E-01	0.00E-01	0.00E-01	3
15 A 160		BIPHENYL	D	5.00E 03	0.00E-01	0.00E-01	3
21 B 040*	P	BENZ(A)ANTHRACENE	D	1.40E 02	0.00E-01	0.00E-01	3
16 A 220*		POLYCHLORINATED BIPHENYLS	D	< 7.20E 00<	0.00E-01<	0.00E-01	2

TABLE 4-5. TEST BURNER FLUE GAS MAJOR CONTRIBUTIONS TO DS AND WDS FOR HEALTH EFFECTS INCLUDING WORST CASE ASSUMPTIONS

TEST BURNER FLUE GAS COMPOSITE, HEALTH IMPACT

DMEG NO.				COMPOUND NAME	TYPE	CONC E-6 G/SCM	DS	WDS G/S	LCCAT
21 C 100*	P	W		BENZO(A)PYRENE	T	4.40E 01	2.20E 03	1.80E 07	3
21 C 080*	P			DIBENZ(A,H)ANTHRACENE	T	4.40E 01	4.73E 02	3.82E 06	3
04 B 020*	P	W		1,1'-DICHLOROMETHYL ETHER	T	4.70E 02	9.40E 01	7.60E 05	5
16 A 220*		W		POLYCHLORINATED BIPHENYLS	T	4.40E 01	4.40E 01	3.60E 05	3
49 A 010	P			ARSENIC	D	8.60E 01	4.30E 01	3.50E 05	
68 A 010	P			CHROMIUM	S	3.70E 01	3.70E 01	3.00E 05	
21 B 080*				3-METHYLCHOLANTHRENE	T	1.30E 02	3.42E 01	2.80E 05	2
12 A 020*	P	W		N-NITROSODIMETHYLAMINE	T	2.20E 03	3.40E 01	2.73E 05	6
04 B 020*	P	W		1,1'-DICHLOROMETHYL ETHER	T	1.30E 02	2.60E 01	2.10E 05	4
20 A 120*		W		2,4,6-TRINITROPHENOL	T	2.20E 03	2.20E 01	1.80E 05	6
10 C 100*				1,4-DIAMINOBENZENE	T	2.20E 03	2.20E 01	1.80E 05	6
53 A 060				SULFUR DIOXIDE	D	2.70E 05	2.10E 01	1.70E 05	
10 C 040*				AMINOTOLUENES	T	2.20E 03	2.00E 01	1.61E 05	6
10 C 043*				4-AMINOTOLUENE	T	2.20E 03	2.00E 01	1.61E 05	6
10 C 041*				2-AMINOTOLUENE	T	2.20E 03	2.00E 01	1.61E 05	6
10 C 042*				3-AMINOTOLUENE	T	2.20E 03	2.00E 01	1.61E 05	6
12 A 040*	P			N-NITROSODIETHYLAMINE	T	2.20E 03	1.83E 01	1.50E 05	6
23 B 100*		W		DIHYDROACRIDINE	T	2.20E 03	1.40E 01	1.11E 05	6
10 C 220*				2-AMINONAPHTHALENE	T	2.20E 03	1.30E 01	1.04E 05	6
21 B 080*				3-METHYLCHOLANTHRENE	T	4.40E 01	1.20E 01	9.40E 04	3
20 B 042*				2,6-DINITRO-P-CRESOL	T	2.20E 03	1.10E 01	8.90E 04	6
20 B 041*				3,5-DINITRO-P-CRESOL	T	2.20E 03	1.10E 01	8.90E 04	6
20 B 020*	P	W		4,6-DINITRO-O-CRESOL	T	2.20E 03	1.10E 01	8.90E 04	6
20 B 040*		W		DINITRO-P-CRESOLS	T	2.20E 03	1.10E 01	8.90E 04	6
42 A 080				CARBON DIOXIDE	D	9.80E 07	1.10E 01	8.80E 04	
21 B 040*	P			BENZ(A)ANTHRACENE	D	4.50E 02	1.00E 01	8.10E 04	2
23 B 240*				DIBENZ(A,H)ACRIDINE	T	2.20E 03	1.00E 01	8.10E 04	6
23 B 220*				DIBENZ(A,J)ACRIDINE	T	2.20E 03	8.80E 00	7.11E 04	6
02 B 140*	P	W		HEXACHLOROCYCLOPENTADIENE	T	8.80E 02	8.00E 00	6.50E 04	1
12 A 020*	P	W		N-NITROSODIMETHYLAMINE	T	4.70E 02	7.23E 00	5.84E 04	5
08 B 060*		W		B-PROPIOLACTONE	T	2.20E 03	6.90E 00	5.60E 04	6
20 A 120*		W		2,4,6-TRINITROPHENOL	T	4.70E 02	4.70E 00	3.80E 04	5
10 C 100*				1,4-DIAMINOBENZENE	T	4.70E 02	4.70E 00	3.80E 04	5
23 C 160*		W		DIBENZO(C,G)CARBAZOLE	T	4.70E 02	4.70E 00	3.80E 04	5

TABLE 4-6. TEST BURNER FLUE GAS MAJOR CONTRIBUTIONS TO DS AND WDS FOR ECOLOGICAL EFFECTS INCLUDING WORST CASE ASSUMPTIONS

TEST BURNER FLUE GAS COMPOSITE, ECOLOGY IMPACT

DMEG NO.		COMPOUND NAME	TYPE	CONC E-6 G/SCM	DS	WDS G/S	LCCAT
65 A 010		VANADIUM	S	3.60E 00	3.60E 00	2.90E 04	
83 A 010	P	MERCURY	D	1.60E 01	1.60E 00	1.30E 04	
15 A 120*		ISOPROPYL BENZENE	T	1.30E 02	1.10E-01	8.80E 02	2
15 A 120*		ISOPROPYL BENZENE	T	4.40E 01	3.70E-02	3.00E 02	3
47 A 080	P	HYDROGEN CYANIDE	D	1.02E 03	3.02E-02	2.44E 02	
47 A 060	P	AMMONIA	D	< 1.00E 01<	2.90E-02<	2.30E 02	
15 A 040*	P	TOLUENE	T	1.30E 02	2.82E-02	2.30E 02	2
15 A 040*	P	TOLUENE	T	4.40E 01	9.60E-03	7.72E 01	3
42 A 080		CARBON DIOXIDE	D	9.80E 07	0.00E-01	0.00E-01	
53 A 060		SULFUR DIOXIDE	D	2.70E 05	0.00E-01	0.00E-01	
16 A 220		POLYCHLORINATED BIPHENYLS	D	0.00E-01	0.00E-01	0.00E-01	2
01 A 060		PROPANE	D	0.00E-01	0.00E-01	0.00E-01	
01 A 080		BUTANES	D	0.00E-01	0.00E-01	0.00E-01	
01 A 100		PENTANES	D	0.00E-01	0.00E-01	0.00E-01	
01 A 140		HEXANES	D	0.00E-01	0.00E-01	0.00E-01	
21 B 040*	P	BENZ(A)ANTHRACENE	D	4.50E 02	0.00E-01	0.00E-01	2
21 B 060		7,12-DIMETHYLBENZ(A)ANTHRACENE	D	0.00E-01	0.00E-01	0.00E-01	2
21 C 080*	P	DIBENZ(A,H)ANTHRACENE	D	0.00E-01	0.00E-01	0.00E-01	2
21 C 100*	P	BENZO(A)PYRENE	D	0.00E-01	0.00E-01	0.00E-01	2
54 A 010	P	SELENIUM	D	< 1.30E 02<	0.00E-01<	0.00E-01	
01 A 020	M	METHANE	D	0.00E-01	0.00E-01	0.00E-01	
01 A 040		ETHANE	D	0.00E-01	0.00E-01	0.00E-01	
37 A 010		BORON	S	4.00E 00	0.00E-01	0.00E-01	
58 A 010		BROMINE	S	4.40E-01	0.00E-01	0.00E-01	
82 A 010	P	CADMIUM	S	> 2.00E-01>	0.00E-01>	0.00E-01	
34 A 010		CALCIUM (AS CA+2)	S	> 7.80E 02>	0.00E-01>	0.00E-01	
84 B 010		CERIUM	S	6.20E-01	0.00E-01	0.00E-01	
31 A 010		CESIUM	S	1.10E 00	0.00E-01	0.00E-01	
57 A 010		CHLORINE (AS CL-)	S	3.30E 01	0.00E-01	0.00E-01	
68 A 010	P	CHROMIUM	S	3.70E 01	0.00E-01	0.00E-01	
74 A 010		COBALT	S	1.30E 02	0.00E-01	0.00E-01	
78 A 010	P	COPPER	S	9.30E 00	0.00E-01	0.00E-01	
56 A 010		FLUORINE (AS F-)	S	1.00E 02	0.00E-01	0.00E-01	
39 A 010		GALLIUM	S	< 1.30E 00<	0.00E-01<	0.00E-01	

TABLE 4-7. GASIFIER ASH MAJOR CONTRIBUTIONS TO DS AND WDS FOR HEALTH EFFECTS INCLUDING WORST CASE ASSUMPTIONS

GASIFIER ASH, HEALTH IMPACT

DMEG NO.			COMPOUND NAME	TYPE	CONC E-6 G/G	DS	WDS G/S	LCCAT
16 A 220*		W	POLYCHLORINATED BIPHENYLS	T	3.90E 01	3.90E 04	9.43E 05	3
72 A 010			IRON (AS FE+2)	D	9.00E 04	3.00E 04	7.30E 05	
16 A 220*		W	POLYCHLORINATED BIPHENYLS	T	1.50E 01	1.50E 04	3.62E 05	2
21 C 100*	P	W	BENZO(A)PYRENE	T	3.90E 01	6.50E 02	1.60E 04	3
38 A 010			ALUMINUM	D	8.80E 04	5.50E 02	1.33E 04	
56 A 010			BARIUM	D	5.50E 03	5.50E 02	1.33E 04	
43 A 010			SILICON	D	1.40E 05	4.70E 02	1.12E 04	
71 A 010	P		MANGANESE	D	2.20E 02	4.40E 02	1.10E 04	
21 C 100*	P	W	BENZO(A)PYRENE	T	1.50E 01	2.50E 02	6.04E 03	2
68 A 010	P		CHROMIUM	S	1.00E 02	2.00E 02	4.83E 03	
76 A 010	P		NICKEL	S	7.50E 01	1.70E 02	4.03E 03	
32 A 010	P		BERYLLIUM	S	9.00E 00	1.50E 02	3.63E 03	
54 A 010	P		SELENIUM	D	1.50E 01	1.50E 02	3.62E 03	
21 C 080*	P		DIBENZ(A,H)ANTHRACENE	T	3.90E 01	1.40E 02	3.40E 03	3
34 A 010			CALCIUM (AS CA+2)	D	4.80E 04	1.00E 02	2.42E 03	
18 B 020*		W	CATECHOL	T	1.00E 02	1.00E 02	2.42E 03	6
18 A 100*		W	PHENYLPHENOLS	T	1.00E 02	1.00E 02	2.42E 03	6
18 A 140*		W	XYLENOLS	T	1.00E 02	1.00E 02	2.42E 03	6
18 A 101*			O-PHENYLPHENOL	T	1.00E 02	1.00E 02	2.42E 03	6
18 C 040*		W	2-NAPHTHOL	T	1.00E 02	1.00E 02	2.42E 03	6
18 A 102*			P-PHENYLPHENOL	T	1.00E 02	1.00E 02	2.42E 03	6
18 C 081*			1-INDANOL	T	1.00E 02	1.00E 02	2.42E 03	6
18 A 082*			M-ETHYLPHENOL	T	1.00E 02	1.00E 02	2.42E 03	6
18 A 144*			2,6-XYLENOL	T	1.00E 02	1.00E 02	2.42E 03	6
18 A 083*			P-ETHYLPHENOL	T	1.00E 02	1.00E 02	2.42E 03	6
18 A 145*			3,5-XYLENOL	T	1.00E 02	1.00E 02	2.42E 03	6
19 A 060*	P	W	PENTACHLOROPHENOL	T	1.00E 02	1.00E 02	2.42E 03	6
18 A 146*			3,4-XYLENOL	T	1.00E 02	1.00E 02	2.42E 03	6
19 B 020*		W	CHLORINATED CRESOLS	T	1.00E 02	1.00E 02	2.42E 03	6
18 A 160*		W	ETHYL CRESOLS	T	1.00E 02	1.00E 02	2.42E 03	6
19 B 021*			CHLORINATED-O-CRESOLS	T	1.00E 02	1.00E 02	2.42E 03	6
18 A 103*			M-PHENYLPHENOL	T	1.00E 02	1.00E 02	2.42E 03	6
19 B 022*	P		CHLORINATED-M-CRESOLS	T	1.00E 02	1.00E 02	2.42E 03	6
18 A 162*			4-ETHYL-O-CRESOL	T	1.00E 02	1.00E 02	2.42E 03	6

TABLE 4-8. GASIFIER ASH MAJOR CONTRIBUTIONS TO DS AND WDS FOR ECOLOGICAL EFFECTS INCLUDING WORST CASE ASSUMPTIONS

GASIFIER ASH, ECOLOGY IMPACT

DMEG NO.		COMPOUND NAME	TYPE	CONC E-6 G/G	DS	WDS G/S	LCCAT
02 A 380*	W	HEXACHLOROCYCLOHEXANE	T	3.30E 02	8.24E 04	2.00E 06	1
16 A 220*	W	POLYCHLORINATED BIPHENYLS	T	3.90E 01	3.90E 04	9.43E 05	3
48 A 010		PHOSPHORUS	D	2.00E 03	2.00E 04	4.83E 05	
16 A 220*	W	POLYCHLORINATED BIPHENYLS	T	1.50E 01	1.50E 04	3.62E 05	2
02 A 380*	W	HEXACHLOROCYCLOHEXANE	T	1.50E 01	3.74E 03	9.10E 04	2
72 A 010		IRON (AS FE+2)	D	9.00E 04	1.80E 03	4.40E 04	
38 A 010		ALUMINUM	D	8.80E 04	4.40E 02	1.10E 04	
08 D 281*		DIMETHYL PHTHALATE	T	1.00E 02	1.30E 02	3.02E 03	6
08 D 282*		DIETHYL PHTHALATE	T	1.00E 02	1.30E 02	3.02E 03	6
08 D 280*	P W	PHTHALATE ESTERS (MW:194-279)	T	1.00E 02	1.30E 02	3.02E 03	6
08 D 283*		DI-N-BUTYL PHTHALATE	T	1.00E 02	1.30E 02	3.02E 03	6
76 A 010	P	NICKEL	S	7.50E 01	3.80E 01	9.10E 02	
08 D 280*	P W	PHTHALATE ESTERS (MW:194-279)	T	2.60E 01	3.24E 01	7.90E 02	5
08 D 283*		DI-N-BUTYL PHTHALATE	T	2.60E 01	3.24E 01	7.90E 02	5
08 D 282*		DIETHYL PHTHALATE	T	2.60E 01	3.24E 01	7.90E 02	5
08 D 281*		DIMETHYL PHTHALATE	T	2.60E 01	3.24E 01	7.90E 02	5
62 A 010		TITANIUM	D	4.50E 03	2.81E 01	6.80E 02	
19 A 060*	P W	PENTACHLOROPHENOL	T	1.00E 02	2.00E 01	4.83E 02	6
01 B 220	W	DICYCLOPENTADIENE	T	3.30E 02	1.70E 01	4.00E 02	1
34 A 010		CALCIUM (AS CA+2)	D	4.80E 04	1.50E 01	3.62E 02	
65 A 010		VANADIUM	S	4.10E 02	1.40E 01	3.30E 02	
36 A 010		BARIUM	D	5.50E 03	1.10E 01	2.70E 02	
71 A 010	P	MANGANESE	D	2.20E 02	1.10E 01	2.70E 02	
78 A 010	P	COPPER	S	8.10E 01	8.10E 00	2.00E 02	
19 A 060*	P W	PENTACHLOROPHENOL	T	2.60E 01	5.20E 00	1.30E 02	5
20 A 102*		2,5-DINITROPHENOL	T	1.00E 02	5.00E 00	1.21E 02	6
20 A 100*	W	DINITROPHENOLS	T	1.00E 02	5.00E 00	1.21E 02	6
10 C 140*	P W	BENZIDINE	T	1.00E 02	5.00E 00	1.21E 02	6
20 A 101*	P	2,4-DINITROPHENOL	T	1.00E 02	5.00E 00	1.21E 02	6
20 A 080*	W	2-AMINO-4,6-DINITROPHENOL	T	1.00E 02	5.00E 00	1.21E 02	6
10 C 220*	W	2-AMINONAPHTHALENE	T	1.00E 02	5.00E 00	1.21E 02	6
10 C 200*	W	1-AMINONAPHTHALENE	T	1.00E 02	5.00E 00	1.21E 02	6
20 A 103*		2,6-DINITROPHENOL	T	1.00E 02	5.00E 00	1.21E 02	6
82 A 010	P	CADMIUM	S	8.00E-01	4.00E 00	9.70E 01	

TABLE 4-9. GASIFIER ASH SLUICE WATER MAJOR CONTRIBUTIONS TO DS AND WDS FOR HEALTH EFFECTS INCLUDING WORST CASE ASSUMPTIONS

GASIFIER ASH SLUICE WATER, HEALTH IMPACT

DMEG NO.			COMPOUND NAME	TYPE	CONC E-6 G/L	DS	WDS G/S	LCCAT
16 A 220		W	POLYCHLORINATED BIPHENYLS	T	1.30E 05	2.51E 07	1.80E 08	
21 C 100*	P	W	BENZO(A)PYRENE	T	1.30E 05	4.20E 05	2.93E 06	
21 C 080*	P		DIBENZ(A,H)ANTHRACENE	T	1.30E 05	9.00E 04	6.30E 05	
18 C 020		W	1-NAPHTHOL	T	1.30E 05	2.51E 04	1.80E 05	
18 A 142*	P		2,4-XYLENOL	T	1.30E 05	2.51E 04	1.80E 05	
18 A 145			3,5-XYLENOL	T	1.30E 05	2.51E 04	1.80E 05	
18 C 040		W	2-NAPHTHOL	T	1.30E 05	2.51E 04	1.80E 05	
18 A 160		W	ETHYL CRESOLS	T	1.30E 05	2.51E 04	1.80E 05	
18 A 144			2,6-XYLENOL	T	1.30E 05	2.51E 04	1.80E 05	
18 A 162			4-ETHYL-O-CRESOL	T	1.30E 05	2.51E 04	1.80E 05	
18 A 163			2-ETHYL-P-CRESOL	T	1.30E 05	2.51E 04	1.80E 05	
18 A 180		W	POLYALKYLPHENOLS (MW>135)	T	1.30E 05	2.51E 04	1.80E 05	
18 A 181			2,4,6-TRIMETHYL METHYL PHENOL	T	1.30E 05	2.51E 04	1.80E 05	
18 A 182			4,6-DI-TERT-BUTYL-M-CRESOL	T	1.30E 05	2.51E 04	1.80E 05	
18 A 183			2,6-DIMETHYL-4-HEPTYL PHENOL	T	1.30E 05	2.51E 04	1.80E 05	
18 B 020		W	CATECHOL	T	1.30E 05	2.51E 04	1.80E 05	
18 B 040		W	1,3-DIHYDROXYBENZENE	T	1.30E 05	2.51E 04	1.80E 05	
18 B 060		W	1,4-DIHYDROXYBENZENE	T	1.30E 05	2.51E 04	1.80E 05	
18 B 080		W	1,2,3-TRIHYDROXYBENZENE	T	1.30E 05	2.51E 04	1.80E 05	
20 B 020*	P	W	4,6-DINITRO-O-CRESOL	T	1.30E 05	2.51E 04	1.80E 05	
18 A 083			P-ETHYLPHENOL	T	1.30E 05	2.51E 04	1.80E 05	
18 C 080		W	INDANOLS	T	1.30E 05	2.51E 04	1.80E 05	
18 C 081			1-INDANOL	T	1.30E 05	2.51E 04	1.80E 05	
18 C 082			4-INDANOL	T	1.30E 05	2.51E 04	1.80E 05	
18 C 083			5-INDANOL	T	1.30E 05	2.51E 04	1.80E 05	
19 A 020*	P	W	2-CHLOROPHENOL	T	1.30E 05	2.51E 04	1.80E 05	
18 A 161			6-ETHYL-M-CRESOL	T	1.30E 05	2.51E 04	1.80E 05	
18 A 081			O-ETHYLPHENOL	T	1.30E 05	2.51E 04	1.80E 05	
19 A 040*	P	W	2,4-DICHLOROPHENOL	T	1.30E 05	2.51E 04	1.80E 05	
20 A 080		W	2-AMINO-4,6-DINITROPHENOL	T	1.30E 05	2.51E 04	1.80E 05	
18 A 100		W	PHENYLPHENOLS	T	1.30E 05	2.51E 04	1.80E 05	
19 A 060*	P	W	PENTACHLOROPHENOL	T	1.30E 05	2.51E 04	1.80E 05	
18 A 102			P-PHENYLPHENOL	T	1.30E 05	2.51E 04	1.80E 05	
18 A 103			M-PHENYLPHENOL	T	1.30E 05	2.51E 04	1.80E 05	

TABLE 4-10. GASIFIER ASH SLUICE WATER MAJOR CONTRIBUTIONS TO DS AND WDS FOR ECOLOGICAL EFFECTS INCLUDING WORST CASE ASSUMPTIONS

GASIFIER ASH SLUICE WATER, ECOLOGY IMPACT

DMEG NO.			COMPOUND NAME	TYPE	CONC E-6 G/L	DS	WDS G/S	LCCAT
16 A 220		W	POLYCHLORINATED BIPHENYLS	T	1.30E 05	2.51E 07	1.80E 08	
02 A 380		W	HEXACHLOROCYCLOHEXANE	T	1.30E 05	6.30E 06	4.40E 07	
08 D 283			DI-N-BUTYL PHTHALATE	T	1.30E 05	8.40E 04	5.90E 05	
08 D 282			DIETHYL PHTHALATE	T	1.30E 05	8.40E 04	5.90E 05	
08 D 281			DIMETHYL PHTHALATE	T	1.30E 05	8.40E 04	5.90E 05	
08 D 280*	P	W	PHTHALATE ESTERS (MW:194-279)	T	1.30E 05	8.40E 04	5.90E 05	
19 A 060*	P	W	PENTACHLOROPHENOL	T	1.30E 05	5.02E 03	3.51E 04	
16 A 040			BROMOBENZENE	T	1.30E 05	1.30E 03	8.80E 03	
26 B 040		W	TRITOTYL PHOSPHATES	T	1.30E 05	1.30E 03	8.80E 03	
16 A 020*	P		CHLOROBENZENE	T	1.30E 05	1.30E 03	8.80E 03	
16 A 162			HEXACHLOROBENZENE	T	1.30E 05	1.30E 03	8.80E 03	
16 A 081			1-BROMO-2-CHLOROBENZENE	T	1.30E 05	1.30E 03	8.80E 03	
16 A 082			1-BROMO-3-CHLOROBENZENE	T	1.30E 05	1.30E 03	8.80E 03	
16 A 083			1-BROMO-4-CHLOROBENZENE	T	1.30E 05	1.30E 03	8.80E 03	
16 A 100*	P		1,2-DICHLOROBENZENE	T	1.30E 05	1.30E 03	8.80E 03	
10 C 200		W	1-AMINONAPHTHALENE	T	1.30E 05	1.30E 03	8.80E 03	
16 A 080			BROMOCHLOROBENZENES	T	1.30E 05	1.30E 03	8.80E 03	
16 A 120*	P		1,3-DICHLOROBENZENE	T	1.30E 05	1.30E 03	8.80E 03	
20 A 101*	P		2,4-DINITROPHENOL	T	1.30E 05	1.30E 03	8.80E 03	
10 C 140*	P	W	BENZIDINE	T	1.30E 05	1.30E 03	8.80E 03	
16 A 062			1,3-DIBROMOBENZENE	T	1.30E 05	1.30E 03	8.80E 03	
16 A 063			1,4-DIBROMOBENZENE	T	1.30E 05	1.30E 03	8.80E 03	
20 A 080		W	2-AMINO-4,6-DINITROPHENOL	T	1.30E 05	1.30E 03	8.80E 03	
16 A 160*	P		POLYCHLORINATED BENZENES	T	1.30E 05	1.30E 03	8.80E 03	
16 B 043			1,4-BIS(CHLOROMETHYL)BENZENE	T	1.30E 05	1.30E 03	8.80E 03	
21 A 020*	P		NAPHTHALENE	T	1.30E 05	1.30E 03	8.80E 03	
16 A 161			1,2,4-TRICHLOROBENZENE	T	1.30E 05	1.30E 03	8.80E 03	
01 B 220		W	DICYCLOPENTADIENE	T	1.30E 05	1.30E 03	8.80E 03	
20 A 103			2,6-DINITROPHENOL	T	1.30E 05	1.30E 03	8.80E 03	
10 C 220		W	2-AMINONAPHTHALENE	T	1.30E 05	1.30E 03	8.80E 03	
20 A 100		W	DINITROPHENOLS	T	1.30E 05	1.30E 03	8.80E 03	
16 A 061			1,2-DIBROMOBENZENE	T	1.30E 05	1.30E 03	8.80E 03	
16 B 020		W	A-CHLOROTOLUENE	T	1.30E 05	1.30E 03	8.80E 03	
16 B 040			BIS(CHLOROMETHYL)BENZENES	T	1.30E 05	1.30E 03	8.80E 03	

TABLE 4-11. CYCLONE DUST MAJOR CONTRIBUTIONS TO DS AND WDS FOR HEALTH EFFECTS INCLUDING WORST CASE ASSUMPTIONS

CYCLONE DUST, HEALTH IMPACT

DMEG NO.			COMPOUND NAME	TYPE	CONC E-6 G/G	DS	WDS G/S	LCCAT
16 A 220*		W	POLYCHLORINATED BIPHENYLS	T	1.30E 03	1.30E 06	4.94E 06	3
16 A 220*		W	POLYCHLORINATED BIPHENYLS	T	1.40E 02	1.40E 05	5.32E 05	2
21 C 100*	P	W	BENZO(A)PYRENE	T	1.30E 03	2.20E 04	8.23E 04	3
21 C 080*	P		DIBENZ(A,H)ANTHRACENE	T	1.30E 03	4.64E 03	1.80E 04	3
19 A 020*	P	W	2-CHLOROPHENOL	T	3.40E 03	3.40E 03	1.30E 04	6
19 A 040*	P	W	2,4-DICHLOROPHENOL	T	3.40E 03	3.40E 03	1.30E 04	6
20 B 041*			3,5-DINITRO-P-CRESOL	T	3.40E 03	3.40E 03	1.30E 04	6
19 A 060*	P	W	PENTACHLOROPHENOL	T	3.40E 03	3.40E 03	1.30E 04	6
18 A 042*			O-CRESOL	T	3.40E 03	3.40E 03	1.30E 04	6
19 B 020*		W	CHLORINATED CRESOLS	T	3.40E 03	3.40E 03	1.30E 04	6
18 C 083*			5-INDANOL	T	3.40E 03	3.40E 03	1.30E 04	6
18 A 020*	P	W	PHENOL	T	3.40E 03	3.40E 03	1.30E 04	6
18 A 060*		W	2-METHOXYPHENOL	T	3.40E 03	3.40E 03	1.30E 04	6
18 A 040*		W	CRESOLS	T	3.40E 03	3.40E 03	1.30E 04	6
18 A 080*		W	ETHYLPHENOLS	T	3.40E 03	3.40E 03	1.30E 04	6
18 A 041*			M-CRESOL	T	3.40E 03	3.40E 03	1.30E 04	6
18 A 081*			O-ETHYLPHENOL	T	3.40E 03	3.40E 03	1.30E 04	6
20 A 020*	P	W	2-NITROPHENOL	T	3.40E 03	3.40E 03	1.30E 04	6
18 A 082*			M-ETHYLPHENOL	T	3.40E 03	3.40E 03	1.30E 04	6
20 A 040*		W	3-NITROPHENOL	T	3.40E 03	3.40E 03	1.30E 04	6
18 A 083*			P-ETHYLPHENOL	T	3.40E 03	3.40E 03	1.30E 04	6
20 A 060*	P	W	4-NITROPHENOL	T	3.40E 03	3.40E 03	1.30E 04	6
18 A 100*		W	PHENYLPHENOLS	T	3.40E 03	3.40E 03	1.30E 04	6
20 A 080*		W	2-AMINO-4,6-DINITROPHENOL	T	3.40E 03	3.40E 03	1.30E 04	6
18 A 101*			O-PHENYLPHENOL	T	3.40E 03	3.40E 03	1.30E 04	6
20 A 100*		W	DINITROPHENOLS	T	3.40E 03	3.40E 03	1.30E 04	6
18 A 102*			P-PHENYLPHENOL	T	3.40E 03	3.40E 03	1.30E 04	6
20 A 101*	P		2,4-DINITROPHENOL	T	3.40E 03	3.40E 03	1.30E 04	6
18 A 103*			M-PHENYLPHENOL	T	3.40E 03	3.40E 03	1.30E 04	6
20 A 102*			2,5-DINITROPHENOL	T	3.40E 03	3.40E 03	1.30E 04	6
18 A 120*		W	2,2'-DIHYDROXYDIPHENYL	T	3.40E 03	3.40E 03	1.30E 04	6
20 A 103*			2,6-DINITROPHENOL	T	3.40E 03	3.40E 03	1.30E 04	6
18 A 140*		W	XYLENOLS	T	3.40E 03	3.40E 03	1.30E 04	6
20 A 120*		W	2,4,6-TRINITROPHENOL					

TABLE 4-12. CYCLONE DUST MAJOR CONTRIBUTIONS TO DS AND WDS FOR ECOLOGICAL EFFECTS INCLUDING WORST CASE ASSUMPTIONS

CYCLONE DUST, ECOLOGY IMPACT

DMEG NO.		COMPOUND NAME	TYPE	CONC E-6 G/G	DS	WDS G/S	LCCAT
16 A 220*	W	POLYCHLORINATED BIPHENYLS	T	1.30E 03	1.30E 06	4.94E 06	3
02 A 380*	W	HEXACHLOROCYCLOHEXANE	T	2.60E 03	6.50E 05	2.50E 06	1
16 A 220*	W	POLYCHLORINATED BIPHENYLS	T	1.40E 02	1.40E 05	5.32E 05	2
02 A 380*	W	HEXACHLOROCYCLOHEXANE	T	1.40E 02	3.50E 04	1.32E 05	2
48 A 010		PHOSPHORUS	D	5.90E 02	5.90E 03	2.24E 04	
08 D 281*		DIMETHYL PHTHALATE	T	3.40E 03	4.24E 03	1.61E 04	6
08 D 283*		DI-N-BUTYL PHTHALATE	T	3.40E 03	4.24E 03	1.61E 04	6
08 D 282*		DIETHYL PHTHALATE	T	3.40E 03	4.24E 03	1.61E 04	6
08 D 280*	P W	PHTHALATE ESTERS (MW:194-279)	T	3.40E 03	4.24E 03	1.61E 04	6
08 D 283*		DI-N-BUTYL PHTHALATE	T	7.70E 02	9.62E 02	3.70E 03	5
08 D 282*		DIETHYL PHTHALATE	T	7.70E 02	9.62E 02	3.70E 03	5
08 D 281*		DIMETHYL PHTHALATE	T	7.70E 02	9.62E 02	3.70E 03	5
08 D 280*	P W	PHTHALATE ESTERS (MW:194-279)	T	7.70E 02	9.62E 02	3.70E 03	5
19 A 060*	P W	PENTACHLOROPHENOL	T	3.40E 03	6.80E 02	2.60E 03	6
72 A 010		IRON (AS FE+2)	D	9.20E 03	1.84E 02	7.00E 02	
20 A 102*		2,5-DINITROPHENOL	T	3.40E 03	1.70E 02	6.50E 02	6
20 A 101*	P	2,4-DINITROPHENOL	T	3.40E 03	1.70E 02	6.50E 02	6
20 A 100*	W	DINITROPHENOLS	T	3.40E 03	1.70E 02	6.50E 02	6
20 A 080*	W	2-AMINO-4,6-DINITROPHENOL	T	3.40E 03	1.70E 02	6.50E 02	6
20 A 103*		2,6-DINITROPHENOL	T	3.40E 03	1.70E 02	6.50E 02	6
10 C 220*	W	2-AMINONAPHTHALENE	T	3.40E 03	1.70E 02	6.50E 02	6
10 C 200*	W	1-AMINONAPHTHALENE	T	3.40E 03	1.70E 02	6.50E 02	6
10 C 140*	P W	BENZIDINE	T	3.40E 03	1.70E 02	6.50E 02	6
19 A 060*	P W	PENTACHLOROPHENOL	T	7.70E 02	1.54E 02	5.90E 02	5
01 B 220	W	DICYCLOPENTADIENE	T	2.60E 03	1.30E 02	4.94E 02	1
16 A 063*		1,4-DIBROMOBENZENE	T	1.30E 03	6.50E 01	2.50E 02	3
16 A 162*		HEXACHLOROBENZENE	T	1.30E 03	6.50E 01	2.50E 02	3
16 A 061*		1,2-DIBROMOBENZENE	T	1.30E 03	6.50E 01	2.50E 02	3
16 A 060*		DIBROMOBENZENES	T	1.30E 03	6.50E 01	2.50E 02	3
16 A 160*	P	POLYCHLORINATED BENZENES	T	1.30E 03	6.50E 01	2.50E 02	3
16 B 020*	W	A-CHLOROTOLUENE	T	1.30E 03	6.50E 01	2.50E 02	3
16 A 161*		1,2,4-TRICHLOROBENZENE	T	1.30E 03	6.50E 01	2.50E 02	3
16 B 043*		1,4-BIS(CHLOROMETHYL)BENZENE	T	1.30E 03	6.50E 01	2.50E 02	3
16 A 080*		BROMOCHLOROBENZENES	T	1.30E 03	6.50E 01	2.50E 02	3

TABLE 4-13. CYCLONE DUST QUENCH WATER MAJOR CONTRIBUTIONS TO DS AND WDS FOR HEALTH EFFECTS INCLUDING WORST CASE ASSUMPTIONS

CYCLONE DUST QUENCH WATER, HEALTH IMPACT

DMEG NO.				COMPOUND NAME	TYPE	CONC E-6 G/L	DS	WDS G/S	LCCAT
16 A 220			W	POLYCHLORINATED BIPHENYLS	T	6.00E 04	1.20E 07	8.33E 07	
21 C 100*	P		W	BENZO(A)PYRENE	T	6.00E 04	2.00E 05	1.40E 06	
21 C 080*	P			DIBENZ(A,H)ANTHRACENE	T	6.00E 04	4.30E 04	3.00E 05	
18 B 040			W	1,3-DIHYDROXYBENZENE	T	6.00E 04	1.20E 04	8.33E 04	
18 B 060			W	1,4-DIHYDROXYBENZENE	T	6.00E 04	1.20E 04	8.33E 04	
18 A 183				2,6-DIMETHYL-4-HEPTYL PHENOL	T	6.00E 04	1.20E 04	8.33E 04	
18 B 020			W	CATECHOL	T	6.00E 04	1.20E 04	8.33E 04	
18 C 040			W	2-NAPHTHOL	T	6.00E 04	1.20E 04	8.33E 04	
18 A 182				4,6-DI-TERT-BUTYL-M-CRESOL	T	6.00E 04	1.20E 04	8.33E 04	
18 C 081				1-INDANOL	T	6.00E 04	1.20E 04	8.33E 04	
18 C 082				4-INDANOL	T	6.00E 04	1.20E 04	8.33E 04	
18 C 083				5-INDANOL	T	6.00E 04	1.20E 04	8.33E 04	
19 A 020*	P		W	2-CHLOROPHENOL	T	6.00E 04	1.20E 04	8.33E 04	
18 B 080			W	1,2,3-TRIHYDROXYBENZENE	T	6.00E 04	1.20E 04	8.33E 04	
18 A 083				P-ETHYLPHENOL	T	6.00E 04	1.20E 04	8.33E 04	
19 A 040*	P		W	2,4-DICHLOROPHENOL	T	6.00E 04	1.20E 04	8.33E 04	
18 C 080			W	INDANOLS	T	6.00E 04	1.20E 04	8.33E 04	
18 A 102				P-PHENYLPHENOL	T	6.00E 04	1.20E 04	8.33E 04	
19 A 060*	P		W	PENTACHLOROPHENOL	T	6.00E 04	1.20E 04	8.33E 04	
18 A 120			W	2,2'-DIHYDROXYDIPHENYL	T	6.00E 04	1.20E 04	8.33E 04	
18 A 140			W	XYLENOLS	T	6.00E 04	1.20E 04	8.33E 04	
19 B 020			W	CHLORINATED CRESOLS	T	6.00E 04	1.20E 04	8.33E 04	
19 B 021				CHLORINATED-O-CRESOLS	T	6.00E 04	1.20E 04	8.33E 04	
19 B 022*	P			CHLORINATED-M-CRESOLS	T	6.00E 04	1.20E 04	8.33E 04	
18 A 041				M-CRESOL	T	6.00E 04	1.20E 04	8.33E 04	
18 A 143				2,5-XYLENOL	T	6.00E 04	1.20E 04	8.33E 04	
19 B 023				CHLORINATED-P-CRESOLS	T	6.00E 04	1.20E 04	8.33E 04	
20 A 020*	P		W	2-NITROPHENOL	T	6.00E 04	1.20E 04	8.33E 04	
18 A 146				3,4-XYLENOL	T	6.00E 04	1.20E 04	8.33E 04	
18 A 160			W	ETHYL CRESOLS	T	6.00E 04	1.20E 04	8.33E 04	
18 A 082				M-ETHYLPHENOL	T	6.00E 04	1.20E 04	8.33E 04	
20 A 060*	P		W	4-NITROPHENOL	T	6.00E 04	1.20E 04	8.33E 04	
18 A 163				2-ETHYL-P-CRESOL	T	6.00E 04	1.20E 04	8.33E 04	
18 A 101				O-PHENYLPHENOL	T	6.00E 04	1.20E 04	8.33E 04	

TABLE 4-14. CYCLONE DUST QUENCH WATER MAJOR CONTRIBUTIONS TO DS AND WDS FOR ECOLOGICAL EFFECTS INCLUDING WORST CASE ASSUMPTIONS

CYCLONE DUST QUENCH WATER, ECOLOGY IMPACT

DMEG NO.			COMPOUND NAME	TYPE	CONC E-6 G/L	DS	WDS G/S	LCCAT
16 A 220		W	POLYCHLORINATED BIPHENYLS	T	6.00E 04	1.20E 07	8.33E 07	
02 A 380		W	HEXACHLOROCYCLOHEXANE	T	6.00E 04	3.00E 06	2.10E 07	
08 D 282			DIETHYL PHTHALATE	T	6.00E 04	4.00E 04	2.80E 05	
08 D 283			DI-N-BUTYL PHTHALATE	T	6.00E 04	4.00E 04	2.80E 05	
08 D 281			DIMETHYL PHTHALATE	T	6.00E 04	4.00E 04	2.80E 05	
08 D 280*	P	W	PHTHALATE ESTERS (MW:194-279)	T	6.00E 04	4.00E 04	2.80E 05	
19 A 060*	P	W	PENTACHLOROPHENOL	T	6.00E 04	2.40E 03	1.70E 04	
48 A 010			PHOSPHORUS	S	4.00E 02	8.00E 02	5.60E 03	
16 A 082			1-BROMO-3-CHLOROBENZENE	T	6.00E 04	6.00E 02	4.20E 03	
16 A 063			1,4-DIBROMOBENZENE	T	6.00E 04	6.00E 02	4.20E 03	
21 A 020*	P		NAPHTHALENE	T	6.00E 04	6.00E 02	4.20E 03	
16 A 081			1-BROMO-2-CHLOROBENZENE	T	6.00E 04	6.00E 02	4.20E 03	
16 A 060			DIBROMOBENZENES	T	6.00E 04	6.00E 02	4.20E 03	
16 A 083			1-BROMO-4-CHLOROBENZENE	T	6.00E 04	6.00E 02	4.20E 03	
16 A 062			1,3-DIBROMOBENZENE	T	6.00E 04	6.00E 02	4.20E 03	
16 B 040			BIS(CHLOROMETHYL)BENZENES	T	6.00E 04	6.00E 02	4.20E 03	
16 B 041			1,2-BIS(CHLOROMETHYBENZENE	T	6.00E 04	6.00E 02	4.20E 03	
16 A 160*	P		POLYCHLORINATED BENZENES	T	6.00E 04	6.00E 02	4.20E 03	
01 B 220		W	DICYCLOPENTADIENE	T	6.00E 04	6.00E 02	4.20E 03	
16 A 061			1,2-DIBROMOBENZENE	T	6.00E 04	6.00E 02	4.20E 03	
16 A 140*	P		1,4-DICHLOROBENZENE	T	6.00E 04	6.00E 02	4.20E 03	
16 A 162			HEXACHLOROBENZENE	T	6.00E 04	6.00E 02	4.20E 03	
20 A 101*	P		2,4-DINITROPHENOL	T	6.00E 04	6.00E 02	4.20E 03	
16 A 120*	P		1,3-DICHLOROBENZENE	T	6.00E 04	6.00E 02	4.20E 03	
16 A 040			BROMOBENZENE	T	6.00E 04	6.00E 02	4.20E 03	
26 B 040		W	TRITOTYL PHOSPHATES	T	6.00E 04	6.00E 02	4.20E 03	
16 B 020		W	A-CHLOROTOLUENE	T	6.00E 04	6.00E 02	4.20E 03	
20 A 103			2,6-DINITROPHENOL	T	6.00E 04	6.00E 02	4.20E 03	
20 A 100		W	DINITROPHENOLS	T	6.00E 04	6.00E 02	4.20E 03	
16 B 042			1,3-BIS(CHLOROMETHYL)BENZENE	T	6.00E 04	6.00E 02	4.20E 03	
16 B 043			1,4-BIS(CHLOROMETHYL)BENZENE	T	6.00E 04	6.00E 02	4.20E 03	
16 A 161			1,2,4-TRICHLOROBENZENE	T	6.00E 04	6.00E 02	4.20E 03	
10 C 220		W	2-AMINONAPHTHALENE	T	6.00E 04	6.00E 02	4.20E 03	
10 C 140*	P	W	BENZIDINE	T	6.00E 04	6.00E 02	4.20E 03	

TABLE 4-15. DISCHARGE SEVERITY & WEIGHTED DISCHARGE SEVERITY SUMMATIONS FOR THE FT. SNELLING WELLMAN-GALUSHA PROCESS STREAMS INCLUDING WORST CASE ASSUMPTIONS

Stream	Health		Ecology	
	ΣDS	ΣWDS (g/s)	ΣDS	ΣWDS (g/s)
Product Gas Particulate	2.4E5	1.4E8	2.3E3	1.4E6
P. G. Organic Module	1.9E5	1.1E8	3.9E5	2.3E8
Test Burner Flue Gas	2.5E3	2.0E7	5.4	4.4E4
Gasifier Ash	8.7E4	2.1E6	1.6E5	3.8E6
Gasifier Ash Sluice H_2O	2.5E7*	1.8E8*	2.5E7*	1.8E8*
Cyclone Dust	1.4E6	5.5E6	2.1E6	8.0E6
Dust Quench Water	1.2E7*	8.3E7*	1.2E7*	8.3E7*

$aEb = a \times 10^b$

* Total sample organic loading expressed as the single worst case organic compound for maximum DS and WDS.

4.2 BIOASSAY RESULTS SUMMARY

The bioassay tests conducted and a summary of the results obtained are shown in Table 4-16. The detailed results are given in Appendix F as received from the subcontractor, A. D. Little Inc.

TABLE 4-16. BIOASSAY TEST/RESULTS MATRIX

SAMPLE	BIOASSAY TEST			
	AMES	WI-38	RAM	RODENT
Product Gas Composite	Neg.*	Mod.		None
Test Burner Composite	Neg.	None		
Gasifier Ash	Neg.		None	None
Gasifier Ash Sluice Water	Neg.	Mod.		None
Cyclone Dust	Neg.		None	None
Cyclone Dust Quench Water	Neg.	None		None

Neg. - no mutagenicity detected.
None - no in vitro or in vivo toxicity.
Mod. - moderate in vitro cytotoxicity.
* - toxic to test cells.

4.2.1 Mutagenicity Test Results (Ames)

The Ames test was performed on Salmonella typhimurium with and without metabolic activation in a histidine insufficient culture medium such that tester strains were not allowed to colonize. After incubation, the histidine-positive revertant colonies were counted as an indicator of mutagenicity. No sample appeared to be mutagenic in the presence or absence of metabolic activation. The product gas composite was extremely

toxic to the test cells and could only be tested at 0.08, 0.4, 2.0, and 10 µl/plate instead of the 100, 150, 200, and 250 µl/plate as was done for the test burner flue gas composite and liquid stream samples.

4.2.2 In Vitro Cytotoxicity Test Results (Wl-38, RAM)

In vitro cytotoxicity was assayed using Wl-38 human lung fibroblast cells and rabbit alveolar macrophages (RAM). For the Wl-38 assay, the cultured cells were incubated on media containing the sample extracts. After incubation, the cells were removed by trypsinization, diluted with culture medium and assayed for cell viability, protein, and adenosine triphosphate (ATP) levels. No detectable toxicity was found at the highest concentrations of cyclone dust quench water or test burner flue gas composite tested. The product gas composite and the gasifier ash sluice water caused moderate toxicity.

The cyclone dust and gasifier ash were tested for in vitro cytotoxicity using the RAM assay. Alveolar macrophages collected by lung lavage from specific pathogen-free albino rabbits were incubated in media containing finely ground particles of the dust and ash for 20 hours. The cells were subsequently trypsinized, and aliquots of the cell suspensions were assayed for viability and protein and ATP levels. There was no detectable toxicity for either solid tested.

4.2.3 Acute In Vivo Toxicity Test Results (Rodent)

Acute in vivo toxicity was evaluated by oral administration of the samples to fasted, adult albino Sprague-Dawley rats. No signs of toxicity or pharmacological effects were detected. No mortality was recorded and upon autopsy, after a two week observation period, no gross lesions or abnormalities were noted. The gasifier ash and cyclone dust were administered as suspensions in physiological saline; the product gas composite extract, the cyclone dust quench water, and the gasifier ash sluice water were administered by oral intubation without saline. The mortality data suggests that the oral LD_{50} for each test substance is greater than 10.0 g/kg or 10.0 ml/kg.

4.2.4 Ecological Testing

Ecological testing was not conducted on these streams due to the uncertainties in the results interpretation. A ranking of high, medium, or low potential for hazard cannot be made from results of ecological tests. Previous ecological testing of Wellman-Galusha discharge streams with an anthracite coal indicated ecological toxicity from the gasifier ash and a lesser degree from the cyclone dust (Ref. 2). The SAM/1A results for these lignite feed discharge stream samples point to the product gas condensables and the ash sluice water as having the highest ecological WDS values.

4.3 CHEMICAL ANALYSIS RESULTS

The results of the inorganic analysis and both the organic screening and detailed analyses are summarized in this section. The data from these chemical analyses are presented in detail in Appendix D.

The inorganic analysis results describe the elemental composition of each stream and the distribution of these elemental species throughout the process streams. In addition, those results which address specific pollution problems such as water quality and solids leachability are provided here.

The organic analytical approach implemented during this project provided a general characterization of the streams and the distribution of organic classes throughout the process. The detailed organic analysis was prioritized on the basis of the weighted discharge severity (WDS) for each stream determined from the organic screening results. This imposes a limitation on the range of compound specific information that can be applied to the entire process, since some streams had low WDS values and were therefore not included in the detailed analysis.

4.3.1 Gasification System Overview

The mass flows of the minor and trace elements in the process and discharge streams are given in Table 4-17. These mass flows were calculated from analysis of samples and flow rate data collected during operation of the gasifier in two different configurations, as discussed in Section 2.0. Samples from the product gas, gasifier ash, and gasifier ash sluice water were collected during operation with the product gas vented. The distribution of elements among these three streams during product gas venting is presented in Table 4-18. Normal operation of the system includes passage of the product gas through the cyclone for removal of particulates and heavy tar aerosols. The distribution of elements among the test burner flue gas, gasifier ash, gasifier ash sluice water, cyclone dust, and cyclone dust quench water was estimated from the elemental flows for these five streams. This estimated elemental distribution during normal operation is given in Table 4-19. The total for normal operation is the sum of the mass flows in the five streams normally exiting the system.

The organic screening of the samples indicates that the gaseous streams and the cyclone dust quench water were higher in aromatics than the solid streams and the gasifier ash sluice water, which were primarily aliphatic. The product gas and the cyclone dust contained high concentrations of extractable organics compared to the test burner flue gas, the liquid streams, and the gasifier ash. A summary of the extractable organic content of the streams is given in Table 4-20.

TABLE 4-17. MASS FLOW FOR THE MINOR AND TRACE ELEMENTS

	Test Burner Flue Gas g/h	Product Gas Particulate g/h	Product Gas Org. Module g/h	Ash Sluice Water g/h	Cyclone Quench Water g/h	Gasifier Ash g/h	Cyclone Dust g/h
Aluminum	3.9E-1	5.5E1	8.6E-4	2.8E-1	2.8E-1	8.5E3	1.6E2
Antimony	<2.7E-1	<7.8E1	<3.3E-2	5.0E-5		<3.9E-2	<5.5E-3
Arsenic	2.1	7.6E-1	>3.7E-2	8.3E-5	3.0E-3	2.9	8.6E-1
Barium	>2.9	1.6E1	4.3E-2	3.3E-3	1.4E-2	5.3E2	1.8E1
Beryllium		5.3E-3				8.6E-1	5.5E-3
Bismuth		5.3E-3					4.1E-3
Boron	9.7E-2	1.1	>2.7E-2	1.2E-1	2.5E-2	2.0E1	1.5
Bromine	1.1E-2	2.7E-1	1.8E-3	5.0E-4	1.0E-3	1.9E-1	1.2E-1
Cadmium	>4.9E-3	5.5E-1		<5.0E-5	<1.3E-4	7.8E-2	2.7E-2
Calcium	>1.9E1	3.1E2	9.4E-1	5.5	1.4	4.7E3	4.0E2
Cerium	1.5E-2	1.0E-1	1.8E-3	5.0E-5	5.0E-5	1.1E1	2.0E-1
Cesium	2.7E-2	4.7E-3			1.0E-4	7.8E-1	9.6E-3
Chlorine	8.0E-1	>6.6	3.3E-2	2.0	8.6E-1	1.4E1	7.8E-1
Chromium	9.0E-1	1.8E-1	3.1E-2	1.8E-4	<1.3E-4	9.7	1.5E-1
Cobalt	3.2	2.9E-2	>1.6E-3	<5.0E-5	2.3E-4	2.2	6.8E-2
Copper	2.3E-1	5.5E-1	2.3E-2	4.3E-4	3.0E-4	7.8	4.1E-1
Dysprosium		3.5E-3				6.8E-1	8.2E-3
Erbium		1.3E-3				2.9E-1	4.1E-3
Europium		2.0E-3				2.9E-1	5.5E-3
Fluorine	2.4	2.7	1.9E-2	2.2E-2	5.0E-2	1.8E1	3.8
Gadolinium		3.9E-3				3.9E-1	5.5E-3
Gallium	<3.2E-2	4.7E-2	2.7E-2	2.0E-4	5.0E-4	8.6E-1	4.5E-1
Germanium	4.9E-3	1.5E-2			1.8E-4	8.7E-2	8.2E-2
Gold						9.7E-2	
Hafnium		5.9E-3				3.9E-1	5.5E-3
Holmium		2.0E-3			1.5E-4	1.9E-2	5.5E-3
Iodine	1.6E-2	<8.2E-3					
Iridium							
Iron	>7.6	<6.8E1	9.4E-1	3.0E-2	1.2E-1	8.6E3	1.2E2
Lanthanum	2.0E-2	7.4E-2	2.7E-3	<2.5E-5		1.1E1	1.1E-1

TABLE 4-17. MASS FLOW FOR THE MINOR AND TRACE ELEMENTS (Cont'd)

	Test Burner Flue Gas g/h	Product Gas Particulate g/h	Product Gas Org. Module g/h	Ash Sluice Water g/h	Cyclone Quench Water g/h	Gasifier Ash g/h	Cyclone Dust g/h
Lead	3.7E-1	2.7E-1	5.9E-2	2.0E-4	2.5E-3	4.9E-1	1.1E-1
Lithium	<3.4E-2	2.5E-1	1.3E-2	1.0E-2	1.0E-3	4.7	8.2E-2
Lutetium						2.9E-2	
Magnesium	>3.2	8.0E2	5.1E-2	2.8E-1	2.8E-1	1.2E3	1.0E2
Manganese	4.1E-1	2.5E-1	1.5E-2	5.0E-5	<2.5E-5	2.1E1	2.6E-1
Mercury	3.9E-1	1.3E1	6.8E-3	3.5E-5	1.0E-5	1.7E-1	3.1E-2
Molybdenum	4.4E-1	2.0E-2		7.8E-3	1.0E-4	1.4	2.7E-2
Neodymium	6.1E-4	2.0E-2				2.9	4.1E-2
Nickel	1.1	2.3E-1	2.0E-2	5.0E-4	<5.0E-4	7.2	5.5E-2
Niobium	>2.4E-3	2.7E-2		5.0E-5		3.0	6.8E-2
Osmium							
Palladium							
Phosphorus	4.1	>6.6	1.9E-1	1.0E-2	1.0E-2	1.9E2	8.1
Platinum	3.2E-2						
Potassium	>1.2E1	<6.6	1.4E-1	>2.5	>2.5	8.3E2	1.7E1
Praseodymium	3.2E-4	1.3E-2		2.5E-5		1.6	2.7E-2
Rhenium		<6.2E-2		1.0E-3	5.0E-4		
Rubidium	<8.5E-3	<1.4E-2	4.1E-3			4.6	4.1E-2
Ruthenium							
Samarium		1.3E-2				1.2	2.7E-2
Scandium	<1.2E-3	3.9E-2				1.9	6.8E-2
Selenium	<3.2	3.1E1	>6.2E-3	5.0E-4	1.5E-4	1.4	1.9E-1
Silicon	>7.1	>1.4E1	6.8E-1	7.6E-3	5.0E-2	1.3E4	2.5E2
Silver	2.2E-2	2.3E-1	6.2E-2	2.5E-5	5.0E-5	5.8E-2	2.7E-2
Sodium	>3.4	4.3E1	6.4E-2	4.3E1	5.5	1.8E3	1.5E2
Strontium	1.3E-1	8.0	8.6E-3	1.0E-1	2.8E-2	1.8E2	1.9E1
Sulfur	2.9	>7.2	8.8	2.4E1	5.8E-1	8.5E2	1.5E2
Tantalum						<7.8E-2	
Tellurium		2.0E-3					2.7E-3
Terbium		1.3E-3				9.6E-2	1.4E-3

TABLE 4-17. MASS FLOW FOR THE MINOR AND TRACE ELEMENTS (Cont'd)

	Test Burner Flue Gas g/h	Product Gas Particulate g/h	Product Gas Org. Module g/h	Ash Sluice Water g/h	Cyclone Quench Water g/h	Gasifier Ash g/h	Cyclone Dust g/h
Thallium		6.6E-3					1.2E-2
Thorium		1.3E-2				2.2	2.7E-2
Thulium		<6.2E-4				3.9E-2	
Tin	3.7E-2	2.7E-2	1.8E-3	7.6E-2	7.3E-2	4.9E-2	2.7E-2
Titanium	5.1E-1	1.9	4.9E-2	1.1E-3	4.5E-3	4.3E2	5.5
Tungsten		6.6E-3		5.0E-4		9.6E-2	<9.6E-3
Uranium	<9.7E-4	6.6E-3	9.4E-3			1.6	1.2E-2
Vanadium	8.8E-2	7.4E-2	1.9E-3	1.9E-3	3.8E-4	4.0E1	2.6E-1
Ytterbium						2.9E-1	8.2E-3
Yttrium	<4.9E-4	6.2E-2			5.0E-5	5.7	1.8E-1
Zinc	3.2E-1	9.8E-1	6.4E-2	1.1E-3	8.8E-4	1.9	2.2
Zirconium	2.9E-1	1.8E-1	5.1E-4	5.0E-5	1.3E-4	1.8E1	4.0E-1
Ash *						74.41%	18.97%

aEb = a x 10^b

*Ash (mineral content) from proximate analysis, dry basis.

TABLE 4-18. PERCENT DISTRIBUTION OF THE TRACE ELEMENTS AND MINOR ELEMENTS WITH THE PRODUCT GAS ROUTED TO THE START-UP FLARE

ELEMENT	TOTAL g/hr	% of Total			
		PRODUCT GAS PARTICULATE	PRODUCT GAS ORGANIC MODULE COMPOSITE	ASH SLUICE WATER	ASH*
Aluminum	6.8E3	0.8	<0.1	<0.1	99.2
Antimony	8.4E-1	92.5	3.9	<0.1	3.6
Arsenic	3.1	24.5	1.2	<0.1	74.3
Barium	4.4E2	3.7	<0.1	<0.1	96.3
Beryllium	6.9E-1	0.8			99.2
Bismuth	5.3E-3	100.			
Boron	1.7E1	6.4	0.2	0.7	92.8
Bromine	4.2E-1	63.9	0.4	0.1	35.5
Cadmium	6.1E-1	90.0		<0.1	10.0
Calcium	3.9E3	7.9	<0.1	0.1	91.9
Cerium	8.4	1.2	<0.1	<0.1	98.8
Cesium	6.1E-1	0.8			99.2
Chlorine	2.0E1	33.6	0.2	10.2	56.0
Chromium	7.7	2.3	0.4	<0.1	97.3
Cobalt	1.7	1.7	0.1	<0.1	98.2
Copper	6.7	8.2	0.3	<0.1	91.4
Dysprosium	5.3E-1	0.7			99.3
Erbium	2.3E-1	0.6			99.4
Europium	2.3E-1	0.9			99.1
Fluorine	1.7E1	16.1	0.1	0.1	83.6
Gadolinium	3.0E-1	1.3			98.7
Gallium	7.5E-1	6.2	3.6	<0.1	90.2
Germanium	9.0E-2	16.7			83.3
Gold					
Hafnium	8.1E-2	7.3			92.7
Holmium	3.0E-1	0.7			99.3
Iodine	2.3E-2	35.3			64.7
Iridium					
Iron	7.5E3	9.1	<0.1	<0.1	90.9
Lanthanum	8.4	0.9	<0.1	<0.1	99.1
Lead	7.1E-1	38.1	8.3	<0.1	53.6
Lithium	3.9	6.5	0.3	0.3	93.0
Lutetium	2.3E-2				100.

TABLE 4-18. PERCENT DISTRIBUTION OF THE TRACE ELEMENTS AND MINOR ELEMENTS WITH THE PRODUCT GAS ROUTED TO THE START-UP FLARE (Cont'd)

ELEMENT	TOTAL g/hr	% of Total			
		PRODUCT GAS PARTICULATE	PRODUCT GAS ORGANIC MODULE COMPOSITE	ASH SLUICE WATER	ASH*
Magnesium	1.0E3	7.8	<0.1	<0.1	92.2
Manganese	1.6E1	1.5	0.1	<0.1	98.4
Mercury	1.3E1	99.0	<0.1	<0.1	1.0
Molybdenum	1.1	1.8		0.7	97.5
Neodymium	2.3	0.9			99.1
Nickel	5.9	3.9	0.3	<0.1	95.7
Niobium	2.3	1.2		<0.1	98.8
Osmium					
Palladium					
Phosphorum	1.6E2	4.2	0.1	<0.1	95.7
Platinum					
Potassium	6.6E2	1.0	<0.1	0.4	98.6
Praseodymium	1.2	1.1		<0.1	98.9
Rhenium	6.3E-2	98.4		1.6	
Rubidium	3.6	0.4	0.1		99.5
Ruthenium					
Samarium	9.6E-1	1.3			98.7
Scandium	1.5	2.5			97.5
Selenium	3.2E1	96.6	<0.1	<0.1	3.4
Silicon	1.0E4	0.1	<0.1	<0.1	99.9
Silver	3.4E-1	68.2	18.4	<0.1	13.4
Sodium	1.5E3	2.9	<0.1	2.9	94.2
Strontium	1.5E2	5.4	<0.1	0.1	94.5
Sulfur	7.1E2	1.0	1.2	3.4	94.4
Tantalum	6.1E-2				100.
Tellurium	2.0E-3	100.			
Terbium	7.6E-2	1.7			98.3
Thallium	6.6E-3	100.			
Thorium	1.7	0.8			99.2
Thulium	3.1E-2	2.0			98.0

TABLE 4-18. PERCENT DISTRIBUTION OF THE TRACE ELEMENTS AND MINOR ELEMENTS WITH THE PRODUCT GAS ROUTED TO THE START-UP FLARE (Cont'd)

ELEMENT	TOTAL g/hr	% of Total			
		PRODUCT GAS PARTICULATE	PRODUCT GAS ORGANIC MODULE COMPOSITE	ASH SLUICE WATER	ASH*
Tin	1.4E-1	18.9	1.3	53.2	26.6
Titanium	3.4E2	0.6	<0.1	<0.1	99.4
Tungsten	8.2E-2	8.0		0.6	91.4
Uranium	1.2	0.5	0.8		98.7
Vanadium	3.1E1	0.2	0.1	0.1	99.7
Ytterbium	2.3E-1				100.
Yttrium	4.5	1.4			98.6
Zinc	2.5	38.5	2.5	<0.1	58.9
Zirconium	1.4E1	1.3	<0.1	<0.1	98.7

aEb = a x 10^b

*Sampling period two, 1600 to 0300 on 12/13-14/78, ash mass flow = 21g/s

TABLE 4-19. RELATIVE ELEMENTAL DISTRIBUTION ESTIMATED FOR DISCHARGE STREAMS IN NORMAL OPERATING CONFIGURATION

ELEMENT	TOTAL g/hr	% of Total				
		TEST BURNER FLUE GAS	ASH*	ASH SLUICE WATER	CYCLONE DUST	CYCLONE QUENCH WATER
Aluminum	8.7E3	<.1	98.1	<.1	1.8	<.1
Antimony	3.1E-1	85.8	12.4	<.1	1.7	
Arsenic	5.9	35.8	49.5	<.1	14.7	<.1
Barium	5.5E2	0.5	96.2	<.1	3.3	<.1
Beryllium	8.7E-1		100.		<.1	
Bismuth	4.1E-3				100.	
Boron	2.2E1	0.4	92.0	<.6	6.9	.1
Bromine	3.2E-1	3.4	58.9	.2	37.2	.3
Cadmium	1.0E-1	4.5	70.9	<.1	24.5	.1
Calcium	5.1E3	0.4	91.7	.1	7.8	<.1
Cerium	1.1E1	0.1	98.1	<.1	1.8	<.1
Cesium	8.2E-1	3.3	95.5		1.2	<.1
Chlorine	1.8E1	4.3	75.9	10.8	4.2	4.7
Chromium	1.1E1	8.4	90.2	<.1	1.4	<.1
Cobalt	5.5	58.5	40.2	<.1	1.2	<.1
Copper	8.4	2.7	92.4	<.1	4.9	<.1
Dysprosium	6.9E-1		98.8		1.2	
Erbium	2.9E-1		98.6		1.4	
Europium	3.0E-1		98.1		1.9	
Fluorine	2.4E1	9.9	74.2	<.1	15.7	.2
Gadolinium	4.0E-1		98.6		1.4	
Gallium	1.3	2.5	61.8	<.1	35.6	<.1
Germanium	1.8E-1	2.7	52.7		44.5	.1
Gold						
Hafnium	9.7E-2		100.			
Holmium	4.0E-1		98.6		1.4	
Iodine	4.1E-2	39.4	46.7		13.5	.4
Iridium						
Iron	8.7E3	0.1	98.5	<.1	1.4	<.1

TABLE 4-19. RELATIVE ELEMENTAL DISTRIBUTION ESTIMATED FOR DISCHARGE STREAMS IN NORMAL OPERATING CONFIGURATION (Cont'd)

ELEMENT	TOTAL g/hr	% of Total				
		TEST BURNER FLUE GAS	ASH*	ASH SLUICE WATER	CYCLONE DUST	CYCLONE QUENCH WATER
Lanthanum	1.1E1	.2	98.8	<.1	1.0	
Lead	9.7E-1	38.0	50.4	<.1	11.3	.3
Lithium	4.8	.7	97.4	.2	1.7	<.1
Lutetium	2.9E-2		100.			
Magnesium	1.3E3	.2	92.0	<.1	7.7	<.1
Manganese	2.2E1	1.9	96.9	<.1	1.2	<.1
Mercury	5.9E-1	66.0	28.8	<.1	5.2	<.1
Molybdenum	1.9	23.5	74.7	.4	1.4	<.1
Neodymium	2.9	<.1	98.6		1.4	
Nickel	8.4	13.2	86.2	<.1	0.7	<.1
Niobium	3.1	.1	97.7	<.1	2.2	
Osmium						
Palladium						
Phosphorus	2.0E2	2.0	94.0	<.1	4.0	<.1
Platinum	3.2E-2	100.				
Potassium	7.8E2	1.5	96.1	.3	2.2	.3
Praseodymium	1.6	<.1	98.3	<.1	1.7	
Rhenium	1.5E-3		66.7			33.3
Rubidium	4.7	.2	98.9		.9	
Ruthenium						
Samarium	1.2		97.8		2.2	
Scandium	2.0	<.1	96.5		3.5	
Selenium	4.8	66.8	29.2	<.1	4.0	<.1
Silicon	1.3E4	<.1	98.1	<.1	1.9	<.1
Silver	1.1E-1	20.5	54.2	<.1	25.2	<.1
Sodium	2.0E3	.2	89.9	2.2	7.5	.3
Strontium	2.0E2	<.1	90.3	<.1	9.5	<.1
Sulfur	3.9E3	74.0	21.7	.6	3.8	

TABLE 4-19. RELATIVE ELEMENTAL DISTRIBUTION ESTIMATED FOR DISCHARGE STREAMS IN NORMAL OPERATING CONFIGURATION (Cont'd)

ELEMENT	TOTAL g/hr	% of Total				
		TEST BURNER FLUE GAS	ASH*	ASH SLUICE WATER	CYCLONE DUST	CYCLONE QUENCH WATER
Tantalum	<7.8E-2		100.			
Tellurium	2.7E-3				100.	
Terbium	9.7E-2		98.6		1.4	
Thallium	1.2E-2				100.	
Thorium	2.2		98.8		1.2	
Thulium	3.5E-2		100.			
Tin	2.6E-1	14.1	18.7	29.0	10.3	27.9
Titanium	4.4E2	.1	98.6	<.1	1.3	<.1
Tungsten	1.1E-1		90.5	.5	9.0	
Uranium	1.6	<.1	99.2		0.7	
Vanadium	4.0E1	.2	99.1	<.1	0.6	<.1
Ytterbium	3.0E-1		97.3		2.7	
Yttrium	5.9	<.1	96.9		3.1	<.1
Zinc	4.4	7.2	43.0	<.1	49.8	<.1
Zirconium	1.9E1	1.6	96.3	<.1	2.1	<.1

aEb = a x 10^b

*Sampling period one, 1430 to 2130 on 12/12/78, ash mass flow = 27 g/s

TABLE 4-20. EXTRACTABLE ORGANIC SUMMARY

STREAM	EXTRACTABLE ORGANICS	
	Concentration	Mass Flow
Product Gas Composite	1.57E7 µg/SCM	8.6 g/sec (68 lb/hr)
Test Burner Composite	5.4E3 µg/SCM	3.6E-2 g/sec (0.29 lb/hr)
Gasifier Ash	6.4E2 µg/g	1.5E-2 g/sec (0.12 lb/hr)
Gasifier Ash Sluice Water	1.3E5 µg/l	<9E-4 g/sec (<7E-3 lb/hr)
Cyclone Dust	1.3E4 µg/g	4.9E-2 g/sec (0.4 lb/hr)
Cyclone Dust Quench Water	6.0E4 µg/l	<4E-4 g/sec (<3E-3 lb/hr)

SCM at 25°C (77°F) and 101 kPa (1 atm), dry basis.

aEb = a x 10^b

The detailed organic analysis was prioritized on the basis of the weighted discharge severity (WDS) for each stream from the organic screening results. Neither the gasifier ash nor the cyclone dust had sufficiently high WDS factors to be included in the detailed analyses. The specific compounds that were quantified in the detailed organic analysis were primarily polynuclear aromatic hydrocarbons (PNA). A total of 3500 µg PNA/SCM was identified in the product gas and 450 µg PNA/SCM in the test burner flue gas. The tabulation of compounds specifically identified is given in Section 4.3.2, while the detailed information concerning the compounds of interest for which analyses were conducted but for which identifications were not made, is given in Appendix D, Section 4.0.

4.3.2 Gas Streams

The average gas compositions for the product gas, the test burner flue gas and the coal bin vent gas are given in Table 4-21. Values are presented along with the 95% confidence interval (2 σ) for:

- Fixed gases (H_2, O_2+ Ar, N_2, CO, CO_2, and CH_4)
- Volatile sulfur species (H_2S, COS, SO_2, and CS_2)
- Light hydrocarbons (CH_4, C_2H_4, C_2H_6, and C_3 to C_6 isomers),
- Volatile nitrogenous species (NH_3 and HCN), and
- Metal carbonyls.

The values represent an average of the available data, taken during the sampling period. Therefore, the calculated confidence intervals include not only sampling and analytical variance but also a major contribution from process variability. Gas chromatography samples from the coal bin vent were not available due to problems encountered in pressurizing the sample bombs. Ammonia, cyanide, and total volatile sulfur concentrations were quite low, however, and it may be assumed that the vent gas is primarily dilution air.

During sampling period one, the sulfur exiting the process in the test burner flue gas, predominantly SO_2, was 72% of the sulfur in the lignite feed, or 0.94 g/s (7.4 lb/hr). During the secnd sampling period, the product gas contained 71% of the feed sulfur as volatile sulfur species, mainly H_2S. This corresponded to a sulfur mass flow of 0.74 g/s (5.8 lb/hr). The average sulfur mass flow exiting the system was 1.2 g/s (9.5 lb/hr).

Nitrogen in the product gas, calculated from the sum of ammonia and cyanide, is the equivalent of 0.34 g/sec (2.7 lb/hr) nitrogen. Based on the coal nitrogen of 0.91% and a coal feed rate to the gasifier of 170 g/sec (1360 lb/hr), nitrogen enters the system with the coal at a rate of 1.5 g/sec (11.9 lb/hr). From these data, the gasifier converts 23% of coal nitrogen to gaseous components that may contribute to emissions of nitrogen oxides from combustion.

TABLE 4-21. GASEOUS SPECIES ANALYSIS SUMMARY

ANALYSIS	PRODUCT GAS	TEST BURNER	COAL BIN VENT GAS
Major Components (% ± 2σ)			NR
CO_2	9.5 ± 1.8†	5.4 ± 2.2	
H_2	15.4 ± 2.4	ND*	
O_2 + Ar	0.7 ± 0.4	16.0 ± 4.8	
N_2	46.8 ± 4.1	77.8 ± 5.2	
CO	26.3 ± 4.6	ND	
CH_4	1.3 ± 0.3	ND	
Sulfur Species (Vppm ± 2σ)			NR
H_2S	1110 ± 130	ND*	
COS	143 ± 16	ND*	
SO_2	16 ± 50	103 ± 122	
CS_2	12 ± 4	2.8 ± 5.1	
Total volatile sulfur	990	NR	1.8 ± 0.4
C_1–C_6 Hydrocarbons (Vppm ± 2σ)			
CH_4	9590 ± 1510†	ND	
C_2H_6	643 ± 132	ND	
C_2H_4	314 ± 68	ND	
C_3 + isomers	445 ± 68	ND*	
C_4 + isomers	193 ± 42	ND*	
C_5 + isomers	202 ± 392	ND*	
C_6 + isomers	197 ± 100		
Nitrogen Species (Vppm ± 2σ)			
NH_3	842 ± 943	<0.005	0.16 ± 0.56
HCN	200 ± 90	1.0 ± 1.0	0.039 ± 0.031
Metal Carbonyls (Vppm)	NR	NR	
$Fe(CO)_5$			0.033
$Ni(CO)_4$			<0.001

ND = not detected.
*One detectable measurement out of four analyses.
†Samples at the product gas start-up vent; 12/13/78, 1715 hours-2320 hours.
NR = no results.

Particulates and liquid aerosols were collected from the product gas start-up vent with a small electrostatic precipitator (ESP) operated at 140°C (285°F). At this temperature, which was ∿20°C (36°F) lower than the product gas temperature, 9.2 g/SCM (4.0 gr/SCF) of solids and liquid aerosols were collected. Extraction of the collected material indicated that 68% was methylene chloride soluble. The product gas particulates and aerosol tars produced a particulate loading of 16.4 mg/SCM (0.007 gr/SCF) in the test burner flue gas prior to the scrubber.

The methylene chloride soluble material in the product gas particulates and tar aerosol represents 5% of the volatile material in the feed lignite, that is, 3.6 g/s (28 lb/hr) in the gas from 71 g/s (560 lb/hr) in the coal. The extractable organics from the XAD-2 resin catch and condensate of the product gas amount to an additional 6% of the lignite volatile matter (4.6 g/s, 36 lb/hr).

The results of analyses for trace and minor elements in samples from the product gas start up vent and the test burner flue gas are presented in Table 4-22. The particulate portion of each gas stream includes all material collected in the ESP at 140°C for the product gas and in the particulate collection components of ths SASS train at 120°C for the test burner flue gas. The vapor portions include material collected in the remaining components of each sampling system (see Appendix B for details).

The gas streams were characterized for a wide range of organic components, in addition to the C_1-C_6 hydrocarbons presented in Table 4-21. Infrared spectra and the distribution in the LC fractions indicate that the organic species present in the test burner flue gas were more highly carboxylated than those in the uncombusted product gas. The aromatics present were relatively simple ring systems, and the fractions contained fewer indications of nitrogenous compounds than the product gas. Benzo(a)anthracene was specifically identified in the test burner flue gas at 450 µg/SCM. Benzo(a)pyrene, dibenzo(a,h)anthracene, and 7,12 dimethylbenzo(a)anthracene were present in the product gas but did not appear in the fraction of the test burner flue gas that was analyzed.

The specific compounds of environmental concern which were identified in the product gas are listed in Table 4-23. Polynuclear aromatics, which have a high potential for causing adverse environmental effects, were identified and quantified at a combined concentration of over 3500 µg/SCM.

The organic character of the product gas particulate extract is quite similar to the product gas organic module composite of the condensate and XAD-2 resin extracts. This is consistent with the tarry nature of the particulate catch which included aerosol tars removed from the gas stream by the ESP and organics condensing in the ESP at 140°C (285°F). The unfractionated samples of the ESP particuates and the organic module condensables are heavily aliphatic, but contain phenolics and nitrogenous

TABLE 4-22. TRACE AND MINOR ELEMENT COMPOSITIONS OF PRODUCT GAS AND TEST BURNER FLUE GAS

ELEMENT	PRODUCT GAS			TEST BURNER FLUE GAS		
	PARTICULATE µg/SCM	VAPOR µg/SCM	TOTAL µg/SCM	PARTICULATE µg/SCM	VAPOR µg/SCM	TOTAL µg/SCM
Aluminum	27,000	0.42	27,000	1.9	14	16
Antimony	<380	<16	<400	<0.3	<11	<11
Arsenic	370	>18	>390	0.40	86	86
Barium	7,600	21	7,600	>120	4.6	>120
Beryllium	2.6		2.6			
Bismuth	2.6		2.6			
Boron	550	>13	>560	0.16	3.8	4.0
Bromine	130	0.88	130	0.096	0.34	0.44
Cadmium	270		270	0.024	>0.2	>0.2
Calcium	150,000	460	150,000	>120	660	>780
Cerium	51	0.88	53	0.34	0.28	0.62
Cesium	2.3		2.3	0.0066	1.1	1.1
Chlorine	>3,200	16	>3,200	0.99	32	33
Chromium	88	15	100	0.59	36	37
Cobalt	14	>0.8	>15	0.14	130	130
Copper	270	11	280	1.2	8.1	9.3
Dysprosium	1.7		1.7			
Erbium	0.64		0.64			
Europium	0.97		0.97			
Fluorine	1,300	9.2	1,300	1.0	99	100
Gadolinium	1.9		1.9			
Gallium	23	13	36	0.29	<1	<1.3
Germanium	7.2		7.2	0.20		0.20
Gold						
Hafnium	2.9		2.9			
Holmium	0.97		0.97			
Iodine	<4		<4		0.66	0.66
Iridium						
Iron	<33,000	460	<33,000	>120	190	>310

TABLE 4-22. TRACE AND MINOR ELEMENT COMPOSITIONS OF PRODUCT GAS AND TEST BURNER FLUE GAS (Cont'd)

ELEMENT	PRODUCT GAS			TEST BURNER FLUE GAS		
	PARTICULATE µg/SCM	VAPOR µg/SCM	TOTAL µg/SCM	PARTICULATE µg/SCM	VAPOR µg/SCM	TOTAL µg/SCM
Lanthanum	36	1.3	37	0.40	0.44	0.84
Lead	130	29	160	3.2	12	15
Lithium	120	6.3	130	1.3	<0.07	<1.4
Lutetium						
Magnesium	39,000	25	39,000	>120	16	>130
Manganese	120	7.1	130	0.44	17	17
Mercury	6,500	3.3	6,500	0.0011	16	16
Molybdenum	9.7		9.7	<0.2	18	18
Neodymium	9.7		9.7	0.025		0.025
Nickel	110	9.6	120	1.4	44	45
Niobium	13		13	0.037	>0.07	>.10
Osmium						
Palladium						
Phosphorus	>3,200	94	>3,300	6.8	160	170
Platinum					1.3	1.3
Potassium	>3,200	69	>3,300	>120	370	>490
Praseodymium	6.4		6.4	0.013		0.013
Rhenium	<0.3		<0.3			
Rubidium	<7	2.0	<9	0.15	<0.2	<.35
Ruthenium						
Samarium	6.4		6.4			
Scandium	19		19	<0.01	<0.04	<.05
Selenium	15,000	>3	15,000	<0.3	<130	<130
Silicon	>6,700	330	>7,000	>120	170	>290
Silver	110	30	140	0.92	*	0.92*
Sodium	21,000	31	21,000	>120	23	>140
Strontium	3,900	4.2	3,900	3.5	2.0	5.5
Sulfur	>3,500	860	>4,300	>120	*	>120*

TABLE 4-22. TRACE AND MINOR ELEMENT COMPOSITIONS OF PRODUCT GAS AND TEST BURNER FLUE GAS (Cont'd)

ELEMENT	PRODUCT GAS			TEST BURNER FLUE GAS		
	PARTICULATE µg/SCM	VAPOR µg/SCM	TOTAL µg/SCM	PARTICULATE µg/SCM	VAPOR µg/SCM	TOTAL µg/SCM
Tantalum						
Tellurium	0.97		0.97			
Terbium	0.64		0.64			
Thallium	3.2		3.2			
Thorium	6.4		6.4			
Thulium	<0.3		<0.3			
Tin	13	0.88	14	0.074	1.4	1.5
Titanium	940	24	960	2.7	18	21
Tungsten	3.2		3.2			
Uranium	3.2	4.6	7.8			
Vanadium	36	0.92	37	<.04		<.04
Ytterbium				0.15	3.4	3.6
Yttrium	30		30			
Zinc	480	31	510	<0.02		<0.02
Zirconium	87	0.25	87	0.99	12	13
				0.25	12	12

*$Ag_2S_2O_8$ impinger solution.

Not listed: product gas <.1 µg/SCM
test burner flue gas <.01 µg/SCM

SCM at 25°C (77°F) and 101 kPa (1 atm), dry basis.

TABLE 4-23. ORGANIC COMPOUNDS IDENTIFIED FROM THE PRODUCT GAS BY SIM GC/MS

COMPOUND IDENTIFIED	CONCENTRATION[Δ] µg/SCM	SAMPLE-LC FRACTION
Polychlorinated biphenyls[†]	≤15.0	PGP-2; PGC-2
Benzo(a)anthracene	1.8E3*	PGP-2,3; PGC-2,3
Benzo(b)fluoranthene	3.8E2*	PGP-2,3; PGC-3
Biphenyl	5.1E3	PGP-3; PGC-3
7,12-Dimethylbenzo(a)anthracene	1.6E2*	PGP-3
Benzo(c)phenanthrene	1.0E3*	PGP-3; PGC-3
Benzo(a)pyrene	1.9E2	PGP-3
3-Methyl chloanthrene	4.7	PGP-3
Dibenzo(a,h)anthracene	6.1	PGP-3
Dinitrotoluenes	2.2E3	PGP-4
Dinitrocresol	1.8E3	PGP-5; PGC-5
Dihydroacridine[◇]	1.1E2	PGP-5,6

SCM at 25°C (77°F) and 101 kPa (1 atm), dry basis.
PGP = Product Gas Particulate
PGC = Product Gas Organic Module Composite

Δ aEb = a x 10^b

* includes possible coeluting isomers

† based on PCB-3 Cl

◇ standard unavailable, based on dihydrophenanthridine

material. They have the same infrared profiles and the fractionations are quite similar. The ESP catch contains more material in LC-2 than does the organic module composite, which indicates more light aromatics, and relatively non-polar polynuclear aromatics. The mass distributions in LC-6 and LC-7 are reversed between the two samples, the module composite having significantly stronger absorbances in the most polar fraction (LC-7) than in LC-6.

4.3.3 Liquid Streams

Two wastewater streams from the Fort Snelling gasifier were characterized: gasifier ash sluice water and cyclone dust quench water. Both were comprised of plant service water that had been in contact with solids from the process. The suspended solids (i.e., ash and cyclone dust) were removed by filtration during sampling, so the water samples contained only dissolved components. Table 4-24 presents the results of a generalized characterization of the two wastewaters for many of the parameters associated with water quality. Leachate solutions from the associated gasifier solid wastes obtained by the RCRA procedures (Ref. 1) were analyzed for most of these parameters and are included here for comparison.

Trace and minor elemental concentrations for the plant service water, ash sluice water, and cyclone dust quench water are provided in Table 4-25. Generally, elements which appeared at higher concentration in the solids are found to have dissolved in the associated sluice or quench water. Solubilities of various elements in the solids are discussed further in conjunction with the results of the RCRA leaching tests in Section 3.4.4.

The gasifier ash sluice water was not fractionated by liquid chromatography during the organic screening. Comparison of the infrared spectra of the sluice water and the ash extracts indicates that the extractable organics in the two samples are quite similar. The extractable organics in both are approximately 90% GRAV material having boiling points greater than 250°C. The organics present in the ash sluice water at 125 mg/l are probably heterocyclic sulfur compounds, carboxylates, and some phenolates. A colorimetric phenol value of 0.4 mg/l phenols was also obtained on the ash sluice water.

The cyclone dust quench water was not taken through the column chromatography step of the organic screening. Due to the uncertainty in the flow rate data for this stream, a weighted discharge severity prioritization could be in error. The cyclone dust quench water contained 59 mg/l extractable organics, approximately half the total organic loading found in the gasifier ash sluice water. These organics, from the infrared analysis of the unfractionated sample, are primarily carboxylic acids and phenols. This is borne out by the colorimetric phenol determination of 9.6 mg/l phenols.

TABLE 4-24. WASTEWATER AND RCRA LEACHATE GENERAL COMPOSITION SUMMARY

	GASIFIER ASH SLUICE WATER	GASIFIER ASH LEACHATE	CYCLONE DUST LEACHATE	CYCLONE DUST QUENCH WATER
pH	9.3	4.13	4.04	10.0
TDS	4300	2130	2280	390
TSS	NA	36	17	NA
Sulfate	2860	NA	NA	55
Sulfite	47	<10	<10	12
Nitrate	3	< 0.25	< 0.25	< 0.5*
Nitrite	< 0.01	< 0.01	< 0.01	< 0.01
Phosphate	< 0.1*	0.1	0.2	0.1*
Cyanide	< 0.02	< 0.02	0.05	0.36
Ammonia	5.4	< 0.007	1.8	0.97
COD	76	1710	1410	800
BOD	28-64†	2970	3150	62-85†
Phenol	0.36	0.002	0.38	9.8
Chloride	78	NA	NA	34
Fluoride	0.87	NA	NA	2.0
TOC	16	< 1	< 1	185

*possible interference.

†possible toxic effects

NA = not analyzed.

All concentrations in µg/ml except pH.

TABLE 4-25. TRACE AND MINOR ELEMENTS IN ASH SLUICE WATER, CYCLONE QUENCH WATER, AND SERVICE WATER

ELEMENT	SERVICE WATER	ASH SLUICE WATER	CYCLONE QUENCH WATER	ELEMENT	SERVICE WATER	ASH SLUICE WATER	CYCLONE QUENCH WATER
Aluminum	100	11,000[2]	11,000[2]	Molybdenum		310	4
Antimony		2[3]		Neodymium			
Arsenic	<1	3.3[3]	120[3]	Nickel	20	20	<20[2]
Barium	30	130[2]	570[2]	Niobium		2	
Beryllium				Osmium			
Bismuth				Palladium			
Boron	10	4,600[2]	990[2]	Phosphorus	50	400	400
Bromine	20	20	40	Platinum			
Cadmium		<2	<5[2]	Potassium	7,000	MC	MC
Calcium	MC	220,000[2]	54,000[2]	Praseodymium		1	
Cerium	4	2	2	Rhenium			
Cesium	2		4	Rubidium	2	40	20
Chlorine	200	78,000[1]	34,000[1]	Ruthenium			
Chromium	10	7[2]	<5[2]	Samarium			
Cobalt	<4	<2	9	Scandium	<2		
Copper	10	17[2]	12[2]	Selenium		20[3]	6
Dysprosium				Silicon	900	300	2,000
Erbium				Silver	<1	1	2
Europium				Sodium	7,000	1,700,000[2]	220,000[2]
Fluorine	400	870[1]	2,000[1]	Strontium	40	4,000[2]	1,100[2]
Gadolinium				Sulfur	3,000	970,000[1]	23,000[1]
Gallium		8	20	Tantalum			
Germanium			7	Tellurium			
Gold				Terbium			
Hafnium				Thallium			
Holmium				Thorium			
Iodine				Thulium			
Iridium			6	Tin		3,000[2]	2,900[2]
Iron	300	1,200[2]	4,900[2]	Titanium	<60	44[2]	180[2]
Lanthanum		<1		Tungsten		20	
Lead		8	99[2]	Uranium			
Lithium	10	400	40	Vanadium	2	77[2]	15[2]
Lutetium				Ytterbium			
Magnesium	5,000	11,000[2]	11,000[2]	Yttrium			2
Manganese	6	2[2]	<1[2]	Zinc	40	44[2]	35[2]
Mercury	NR	1.4[3]	0.4[3]	Zirconium	<4	2	5

Concentrations in µg/1.
Not listed is <1 µg/1.

MC = >10,000 µg/1.
NR = not reported.

All analyses by SSMS except:

[1]Anion/cation analysis
[2]ICP
[3]AAS

The gasifier ash leachate and the cyclone dust leachate were not subjected to any organic screening analysis. The total organic carbon (TOC) content for either sample was less than 1 ppm. This low TOC implies that the organics present in these solids do not leach under the Resource Conservation and Recovery Act procedures (Ref. 1) even though an appreciable amount of organic mass can be solvent extracted.

4.3.4 Solid Streams

The composition of the two solid wastes from the gasifier, gasifier ash, and cyclone dust are primarily dependent on the coal composition and efficiency of gasifier operation (i.e., the extent of conversion of carbonaceous materials to gases). Table 4-26 presents the results of proximate and ultimate analyses of the feed coal, gasifier ash, and cyclone dust. Also included is a mineral analysis of the ash residue from each material resulting from elemental analysis of the ash residue, and mathematical conversion of the elemental concentrations to those for their equivalent oxides. The carbon contents of the gasifier ash and cyclone dust give an indication of the gasifier operating efficiency during the sampling period. Appendix D includes the results of proximate/ultimate analyses of six individual grab samples of the coal. These data give a measure of the variability of the coal composition over the sampling period. The data presented in Table 4-26 are for a composite coal sample consisting of portions of five of these individual samples.

The trace and minor element concentrations in the gasifier ash and cyclone duct follow a general trend that the more volatile metals and those that form volatile compounds appear at higher levels in the cyclone dust. Table 4-27 presents a side-by-side presentation of elemental concentrations in the coal and the two solid waste streams. Enrichment factors were calculated from the ratio of the solid waste concentration to the concentration in the coal. Table 4-28 presents these ratios for the cyclone dust and the gasifier ash. For comparison, the ratios are also presented for the ash residue contents of the gasifier ash and cyclone dust. The observed element enrichment may be the result of the volatilization of these elements or their compounds in the gasifier. This volatilization provides the mechanism for the selective partitioning of elements during the distribution of the ashed material between the cyclone dust and the gasifier ash.

Figures 4-2, 4-3, 4-4, and 4-5 present the enrichment ratios versus the boiling points of the elements. Some degree of enrichment (concentration increase relative to the coal) would be expected simply due to a loss of carbonaceous material during gasification. The enrichment due to this source is estimated by calculating enrichment ratios from the ash (mineral matter) contents of the coal gasifier ash and cyclone dust. These "ash residue" enrichment ratios are shown as horizontal lines in each figure. Individual elements whose enrichment ratios follow those of the ash residue may be assumed to be non-volatile and physically distributed

TABLE 4-26. CHARACTERIZATION ANALYSIS RESULTS FOR SOLID STREAMS

	GASIFIER ASH	CYCLONE DUST	COAL FEED
Proximate (as received)			
% Moisture	1.01	0.44	4.19
% Ash	73.66	18.89	10.45
% Volatiles	6.49	24.30	40.17
% Fixed Carbon	18.84	56.37	45.19
Btu	3709	10670	10036
% Sulfur	1.08	1.50	0.58
Ultimate (dry basis)			
% Carbon	24.64	67.18	60.06
% Hydrogen	0.41	2.32	4.41
% Nitrogen	0.17	0.93	0.87
% Chlorine	0.02	0.03	0.03
% Sulfur	1.09	1.51	0.58
% Ash	74.41	18.97	10.45
% Oxygen (diff)	0.60	9.06	19.41
Mineral Composition of Ashed Residue			
% Silica, SiO_2	39.18	20.71	30.21
Alumina, Al_2O_3	22.38	12.21	14.93
Titania, TiO_2	1.02	0.35	0.46
Ferric oxide, Fe_2O_3	13.40	6.95	6.36
Lime, CaO	9.02	21.55	16.39
Magnesia, MgO	2.89	6.82	6.46
Potassium oxide, K_2O	1.39	0.81	1.49
Sodium Oxide, Na_2O	3.26	7.83	9.00
Sulfur Trioxide, SO_3	3.43	17.02	10.93
Phosphorus pentoxide, P_2O_5	0.61	0.70	0.63
Strontium oxide, SrO	0.31	0.85	0.72
Barium oxide, BaO	0.83	2.01	1.32
Manganese oxide, Mn_3O_4	0.04	0.01	0.01

TABLE 4-27. TRACE AND MINOR ELEMENTAL RESULTS FOR COAL, GASIFIER ASH, AND CYCLONE DUST

ELEMENT	GASIFIER ASH	CYCLONE DUST	COAL	ELEMENT	GASIFIER ASH	CYCLONE DUST	COAL
Ash	74.41%[2]	18.97%[2]	10.91%[2]				
Aluminum	88,000[2]	12,000[2]	8,600[2]	Molybdenum	15	2	1
Antimony	<0.4[1]	<0.4[1]	0.06[1]	Neodymium	30	3	1
Arsenic	30[1]	63[1]	6.5[1]	Nickel	75	4	5
Barium	5,500[2]	1,300[2]	1,300[2]	Niobium	31	5	2
Beryllium	9	0.4	0.4	Osmium			
Bismuth		0.3		Palladium			
Boron	210[3]	110[3]	25	Phosphorus	2,000[2]	590[2]	290[2]
Bromine	2	9	1	Platinum			
Cadmium	0.8	2	0.4	Potassium	8,600[2]	1,300[2]	1,400[2]
Calcium	48,000[2]	29,000[2]	13,000[2]	Praseodymium	16	2	0.7
Cerium	110	15	8	Rhenium			
Cesium	8	0.7	0.9	Rubidium	47	3	9
Chlorine	150[2]	57[2]	33[2]	Ruthenium			
Chromium	100	11	10	Samarium	13	2	1
Cobalt	23	5	2	Scandium	20	5	5
Copper	81	30	8	Selenium	15[1]	14[1]	1[1]
Dysprosium	7	0.6		Silicon	140,000[2]	18,000[2]	15,000[2]
Erbium	3	0.3		Silver	0.6	2	1
Europium	3	0.4	0.2	Sodium	18,000[2]	11,000[2]	7,300[2]
Fluorine	190	280	210	Strontium	1,900[2]	1,400[2]	670[2]
Gadolinium	4	0.4	0.4	Sulfur	8,800[2]	11,000[2]	4,100[2]
Gallium	9	33	19	Tantalum	<0.8		
Germanium	1	6	0.7	Tellurium		0.2	
Gold				Terbium	1	0.1	0.1
Hafnium	1			Thallium		0.9	
Holmium	4	0.4		Thorium	23	2	<1
Iodine	0.2	0.4	0.2	Thulium	0.4		
Iridium				Tin	0.5	2	0.5
Iron	90,000[2]	9,200[2]	4,900[2]	Titanium	4,500[2]	400[2]	310[2]
Lanthanum	110	8	6	Tungsten	1	<0.7	
Lead	5	8	2	Uranium	16	0.9	<0.9
Lithium	48	6	5	Vanadium	410	19	22
Lutetium	0.3			Ytterbium	3	0.6	
Magnesium	13,000[2]	7,800[2]	4,200[2]	Yttrium	59	13	4
Manganese	220[2]	19[2]	11[2]	Zinc	20	160	3
Mercury	1.7[1]	<2.3[1]	0.39[1]	Zirconium	180	29	17

All concentrations µg/g.
Not listed <0.1 µg/g.

All analyses by SSMS except:
[1]AAS
[2]Ultimate/mineral subcontracted
[3]ICP

TABLE 4-28. ENRICHMENT RATIOS FOR THE GASIFIER ASH AND CYCLONE DUST

ELEMENT	GASIFIER ASH	CYCLONE DUST	ELEMENT	GASIFIER ASH	CYCLONE DUST
Ash	6.8	1.7			
Aluminum	10	1.4	Molybdenum	15	2.0
Antimony	<6.7	<6.7	Neodymium	30	3.0
Arsenic	4.6	9.7	Nickel	15	0.8
Barium	4.2	1.0	Niobium	15	2.5
Beryllium	22	1.0	Osmium		
Bismuth		>3	Palladium		
Boron	8.4	4.4	Phosphorus	6.9	2.0
Bromine	2.0	9.0	Platinum		
Cadmium	2.0	5.0	Potassium	6.1	0.9
Calcium	3.7	2.2	Praseodymium	23	2.9
Cerium	14	1.9	Rhenium		
Cesium	8.9	0.8	Rubidium	5.2	0.3
Chlorine	4.5	1.7	Ruthenium		
Chromium	10	1.1	Samarium	13	2
Cobalt	12	2.5	Scandium	4	1
Copper	10	3.8	Selenium	15	14
Dysprosium	>70	>6	Silicon	9.3	1.2
Erbium	>30	>3	Silver	0.6	2.0
Europium	15	2	Sodium	2.5	1.5
Fluorine	0.9	1.3	Strontium	2.8	2.1
Gadolinium	10	1.0	Sulfur	2.1	2.7
Gallium	0.5	1.7	Tantalum		
Germanium	1.4	8.6	Tellurium		>2
Gold			Terbium	10	1
Hafnium	>10		Thallium		>9
Holmium	>40	>4	Thorium	>23	>2
Iodine	1.0	2.0	Thulium	>4	
Iridium			Tin	1	4
Iron	18	1.9	Titanium	14	1.3
Lanthanum	18	1.3	Tungsten	>10	
Lead	2.5	4.0	Uranium	>16	>1
Lithium	9.6	1.2	Vanadium	19	0.9
Lutetium	>3		Ytterbium	>30	>6
Magnesium	3.1	1.9	Yttrium	15	3.3
Manganese	20	1.7	Zinc	6.7	53
Mercury	4.3	>5.9	Zirconium	10	1.7

$$\text{Enrichment Ratio} = \frac{\text{element concentration } (\mu g/g) \text{ in effluent stream}}{\text{element concentration } (\mu g/g) \text{ in coal}}$$

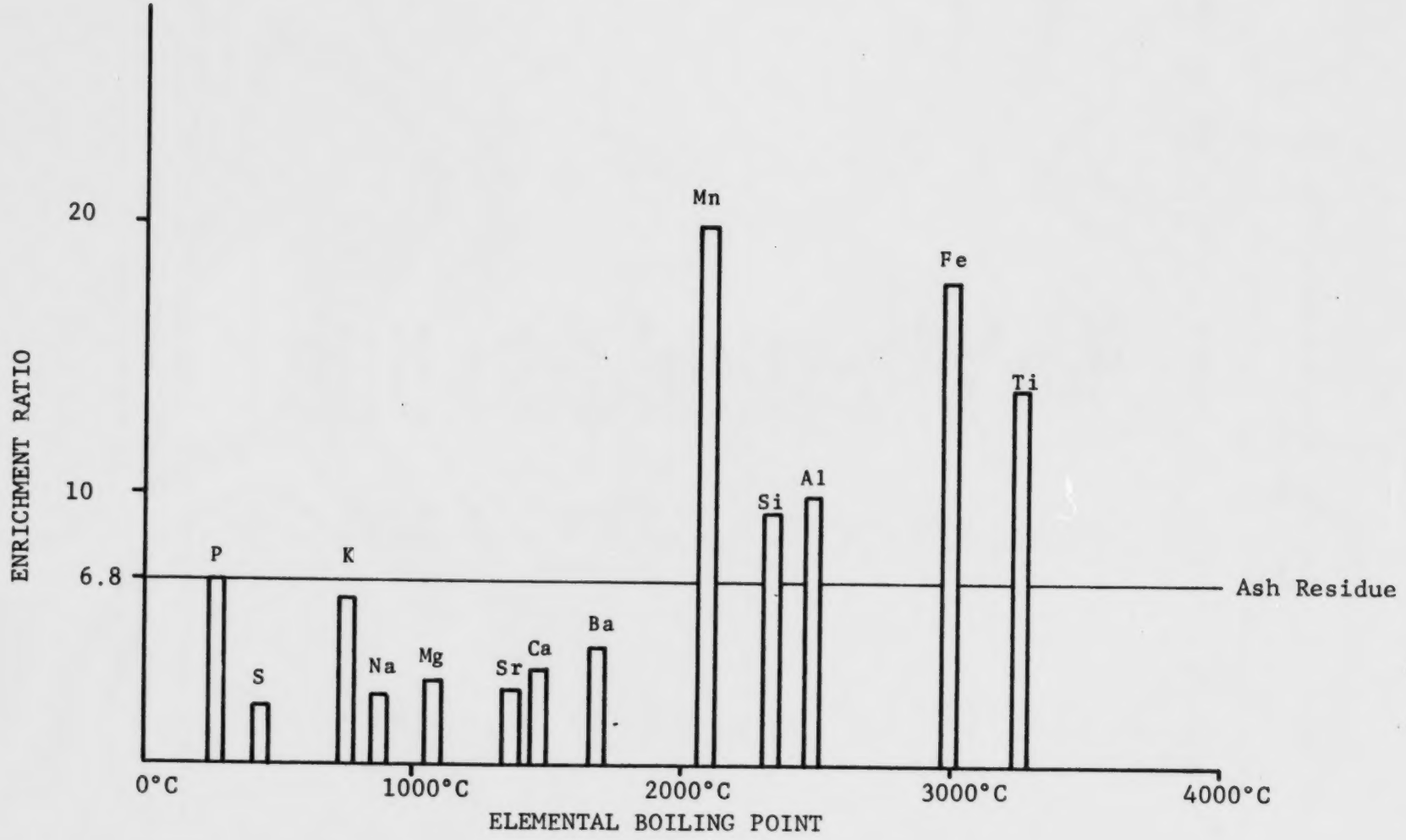


Figure 4-2. Gasifier Ash Major Component Enrichment Ratio vs. Elemental Boiling Point

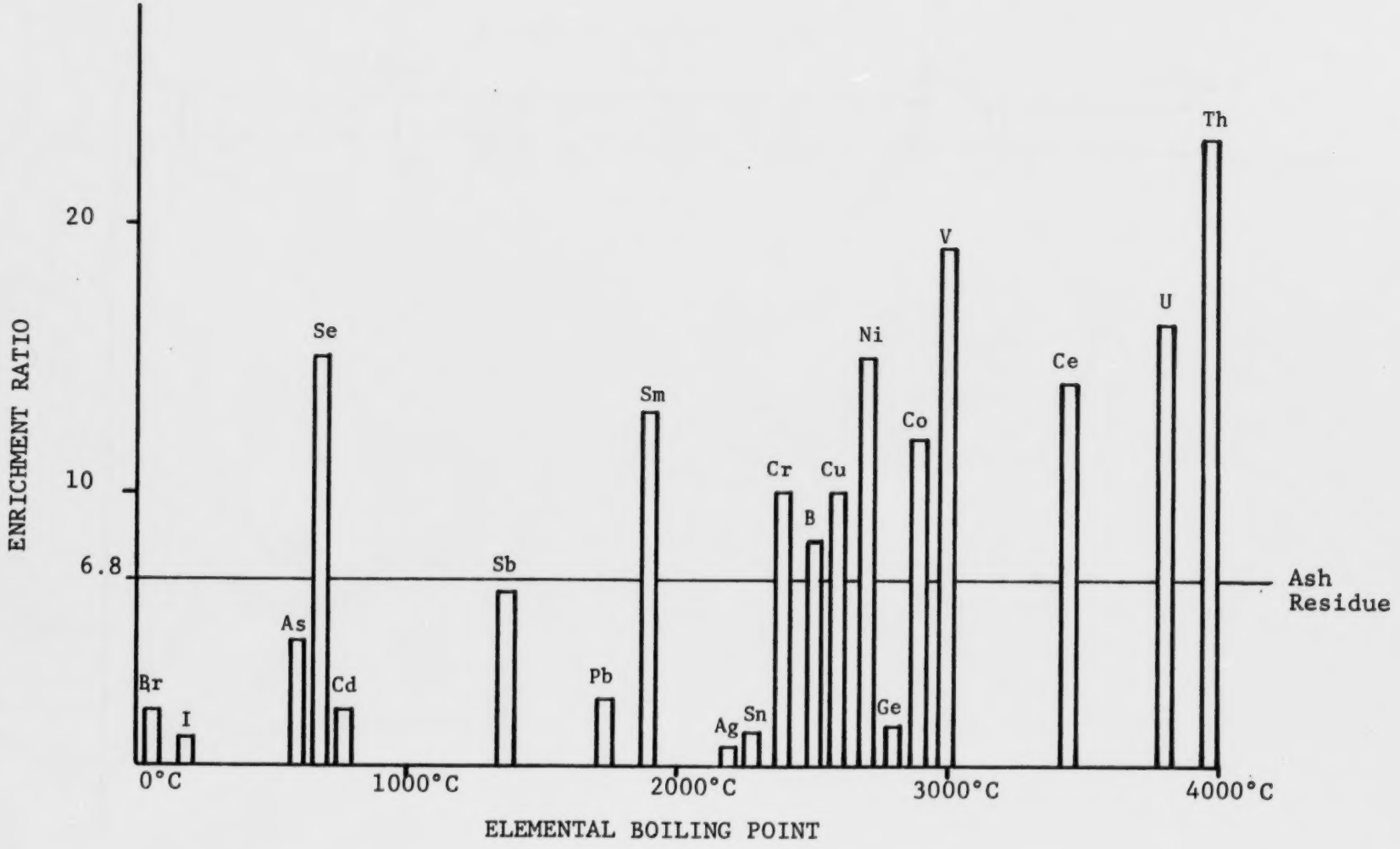


Figure 4-3. Gasifier Ash Trace Element Enrichment Ratio vs. Elemental Boiling Point

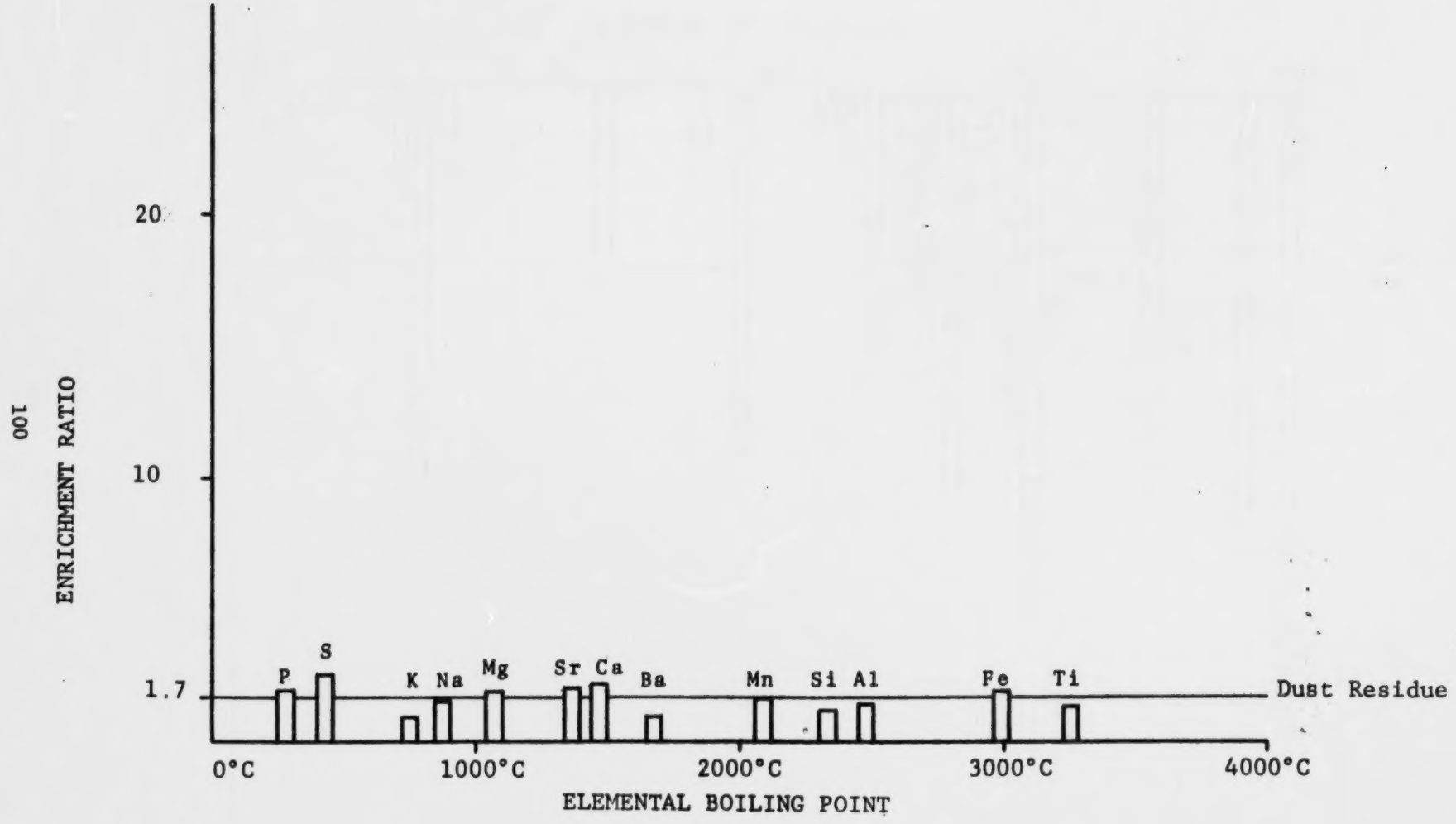


Figure 4-4. Cyclone Dust Major Component Enrichment Ratio vs. Elemental Boiling Point

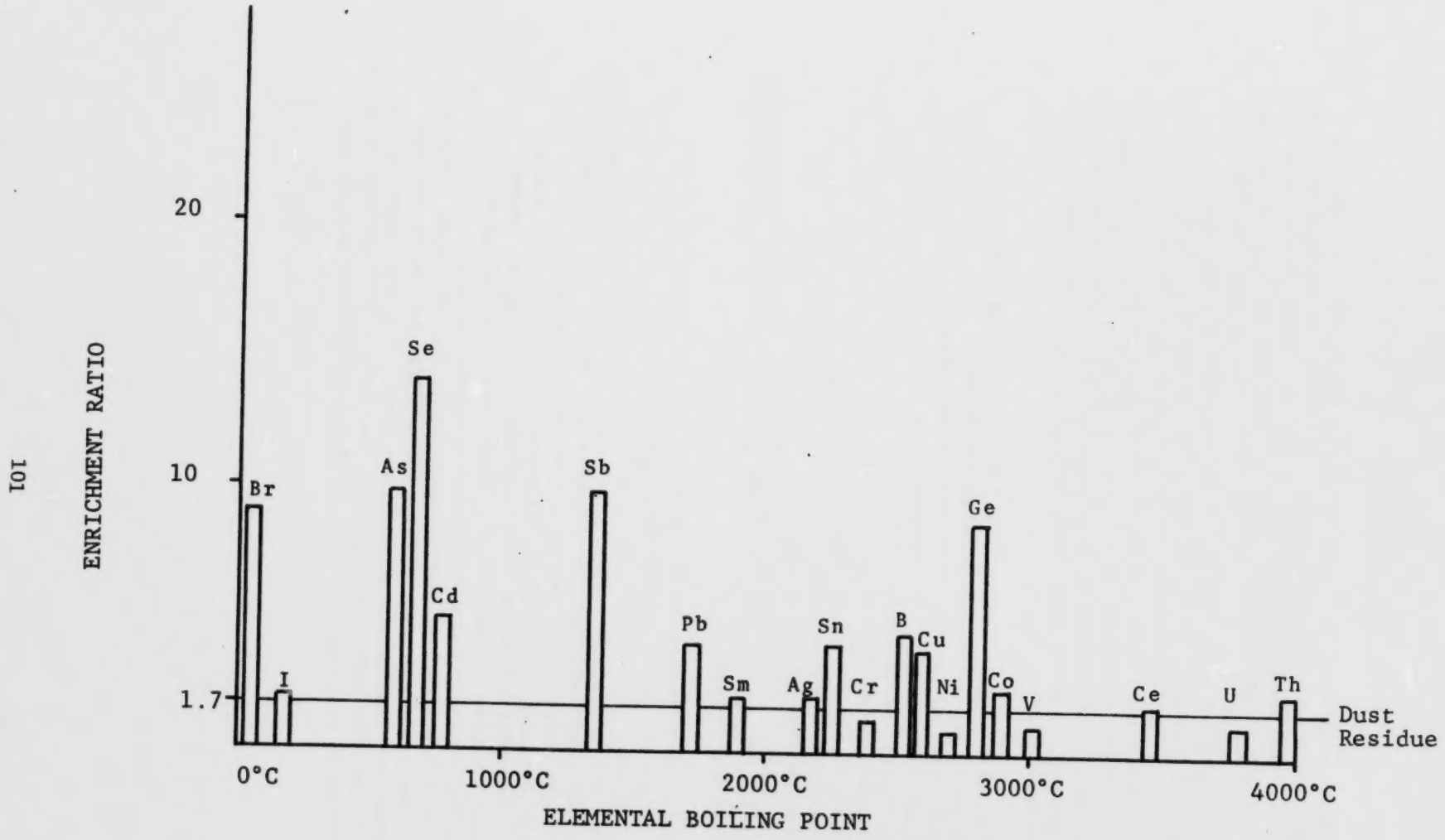


Figure 4-5. Cyclone Dust Trace Element Enrichment Ratio vs. Elemental Boiling Point

with the mineral matter in the coal. Elements deviating significantly from the ash residue are exhibiting some additional mechanism of mobility in the process. The most likely mechanism is volatiliztion resulting in depletion in the gasifier ash and increased concentrations in the cyclone dust. A general upward trend of enrichment with increasing boiling point is seen in the gasifier ash. Anomalies in the trend are present for silver, tin, and germanium which are depleted in the ash. These metals form hydrides or volatile organometallic compounds that would be found condensed in the cyclone dust. No unequivocable trend is seen in the cyclone dust. However, germanium and tin, in addition to lead, antimony, arsenic, selenium, and cadmium show significant enrichment in the cyclone dust. In general, elements with lower boiling points have higher enrichment in the cyclone dust.

The volatilized elements from the lignite feed will remain gaseous, condense partially, or condense completely. Condensation takes place by nucleation or deposition on available surfaces. Nucleation results in small particles if the residence time in the system is relatively low, and deposition is surface area dependent. Either phenomena may result in enriched elemental concentrations for those volatilized elements that condensed in the small particulate trapped by the cyclone. For those elements remaining in the gaseous phase, discharge will be through the gaseous emission streams and product gas. Partial or complete condensation will lead to increased concentration in the cyclone dust. The nonvolatilized elements will then be present in the gasifier ash at higher concentrations than in the cyclone dust.

Components present in the gasifier ash and cyclone dust are dissolved by the sluice or quench water and constitute a potential water pollution problem. In addition, materials may be leached from the discarded solid wastes by runoff rain water. The potential for contamination of surface and groundwater by the leachates may impose restrictions on the disposal of the solids. The extraction procedures specified in the RCRA were used to estimate the leaching potential of the two solid wastes. The results of characterization of these leachate solutions for general water quality are presented in Table 4-24. Tables 4-29 and 4-30 provide the concentrations of trace and minor elements in the leachate solutions from the gasifier ash and cyclone dust, respectively, and the blank extraction solution. The trace and minor element compositions of the sluice and quench waters are also presented for comparison. For many elements the lower pH of the RCRA extraction solution ($\sim$5 versus $\sim$10) resulted in higher concentrations in the leachates than in the corresponding process wastewater.

TABLE 4-29. GASIFIER ASH SLUICE WATER AND RCRA LEACHATE ELEMENTAL COMPOSITION

ELEMENT	ASH SLUICE WATER (pH=9.3)	ASH LEACHATE (pH=4.3)	LEACHATE BLANK (pH=2.01)	ELEMENT	ASH SLUICE WATER (pH=9.3)	ASH LEACHATE (pH=4.3)	LEACHATE BLANK (pH=2.01)
Aluminum	11,000[2]	100	30	Molybdenum	310[2]	10	
Antimony	2[3]	<60[3]	<60[3]	Neodymium			
Arsenic	3.3[3]	19[3]	<5[3]	Nickel	20	40	7
Barium	130[2]	1,000	200	Niobium	2		
Beryllium				Osmium			
Bismuth				Palladium			
Boron	4,600[2]	80		Phosphorus	400	70	20
Bromine	20	4		Platinum			
Cadmium	<2	<7		Potassium	MC	MC	700
Calcium	220,000[2]	MC	600	Praseodymium	1		
Cerium	2	4		Rhenium			
Cesium		1		Rubidium	40	20	
Chlorine	78,000[1]	50	60	Ruthenium			
Chromium	7[2]	1	1	Samarium			
Cobalt	<2	7		Scandium			
Copper	17[2]	100	8	Selenium	20[3]	14[3]	12[3]
Dysprosium				Silicon	300	MC	80
Erbium				Silver	1		
Europium				Sodium	1,700,000[2]	2,000	300
Fluorine	870[1]	3,000	40	Strontium	4,000[2]	6,000	20
Gadolinium				Sulfur	970,000[1]	6,000	80
Gallium	8	1		Tantalum			
Germanium		2		Tellurium			
Gold				Terbium			
Hafnium				Thallium			
Holmium				Thorium		<8	<20
Iodine				Thulium			
Iridium				Tin	3,000[2]		
Iron	1,200[2]	2,000	60	Titanium	44[2]	100	10
Lanthanum	<1	4		Tungsten	20		
Lead	8	7	10	Uranium		<6	<20
Lithium	400	6		Vanadium	77[2]	7	
Lutetium				Ytterbium			
Magnesium	11,000[2]	MC	MC	Yttrium		7	
Manganese	2[2]	500	3	Zinc	44[2]	100	40
Mercury	1.4[3]	<0.6[3]	<0.2[3]	Zirconium	2	5	

Concentration in µg/1.
Not listed <1 µg/1.
MC = >10,000 µg/1.

All analyses by SSMS except:
[1]Anion/cation
[2]ICP
[3]AAS

TABLE 4-30. CYCLONE DUST QUENCH WATER AND RCRA LEACHATE ELEMENTAL COMPOSITION

ELEMENT	QUENCH WATER (pH=10.0)	DUST LEACHATE (pH=4.04)	LEACHATE BLANK (pH=2.01)	ELEMENT	QUENCH WATER (pH=10.0)	DUST LEACHATE (pH=4.04)	LEACHATE BLANK (pH=2.01)
Aluminum	11,000[2]	>1,000	30	Molybdenum	4	2	
Antimony	<60[3]	8	<60[3]	Neodymium			
Arsenic	120[3]	33[3]	<5[3]	Nickel	<20[2]	10	7
Barium	570[2]	1,000	200	Niobium			
Beryllium				Osmium			
Bismuth				Palladium			
Boron	990[2]	100		Phosphorus	400	400	20
Bromine	40	<20		Platinum			
Cadmium	<5[2]			Potassium	MC	MC	700
Calcium	54,000[2]	MC	600	Praseodymium			
Cerium	2	1		Rhenium			
Cesium	4	4		Rubidium	20	20	
Chlorine	34,000[1]	100	60	Ruthenium			
Chromium	<5[2]	1	1	Samarium			
Cobalt	9	2		Scandium			
Copper	12[2]	6	8	Selenium	6	6	12[3]
Dysprosium				Silicon	2,000	MC	80
Erbium				Silver	2		
Europium				Sodium	220,000[2]	>3,000	300
Fluorine	2,000[1]	4,000	40	Strontium	1,100[2]	7,000	20
Gadolinium				Sulfur	23,000[1]	>6,000	80
Gallium	20			Tantalum			
Germanium	7	2		Tellurium			
Gold				Terbium			
Hafnium				Thallium			
Holmium				Thorium		<10	<20
Iodine	6			Thulium			
Iridium				Tin	2,900[2]	2	
Iron	4,900[2]	600	60	Titanium	180[2]	50	10
Lanthanum				Tungsten			
Lead	99[2]	8	10	Uranium		<10	<20
Lithium	40	40		Vanadium	15[2]		
Lutetium				Ytterbium	2		
Magnesium	11,000[2]	MC	MC	Yttrium		3	
Manganese	<1[2]	100	3	Zinc	35[2]	70	40
Mercury	0.4[3]	<0.3[3]	<0.2[3]	Zirconium	5	30	

Concentrations in µg/1.
Not listed <1 µg/1.
MC = >10,000 µg/1.

All analyses by SSMS except:
[1]Anion/cation
[2]ICP
[3]AAS

Tables 4-31 and 4-32 present the total element concentration and the total soluble element concentrations for gasifier ash and cyclone dust. Total concentration was calculated from the solid waste composition (Table 4-27), the solid-to-liquid ratio for the process wastewaters (from flow rates in Table 2-1), and the wastewater compositions (Table 4-25). Total solubles per unit mass of solid for each element was calculated from the wastewater and leachate compositions (Tables 4-29 and 4-30), and the solid-to-liquid ratios for these process waters and the RCRA extraction procedure. The calculations were performed as follows:

$$\text{Total element} = A + B$$

$$\text{Total soluble} = B + C$$

where: A = µg/g of each element in solid

$$B = \mu g/l \text{ in wastewater} \times \left[\frac{\text{1/s wastewater flow}}{\mu g/s \text{ solid flow}}\right]$$

$$C = \mu g/l \text{ in leachate} \times \left[\frac{2\ell \text{ leachate}}{100 \text{ g solid}}\right]$$

In most cases, the soluble portion of each element is less than one percent of the total originally available in the dry solid.

The gasifier ash contained 640 µg/g of extractable organics. From the mass distribution in the liquid chromatography (LC) fractions, the majority of these organics were non-polar, non-volatile aliphatics. Some heterocyclic material and some carbonyl containing material were present. There is very little evidence of aromatic character in the sample. The halogen content of the unfractionated material appeared to be 300 µg/g, but this is probably due to an interference; the highest halogen content measured in an LC fraction was ∿5 µg/g. From the halogen specific screening results of the LC fractions, the ∿300 µg/g halogenated value for the unfractionated samples could be in error by an order of magnitude.

The cyclone dust contained 13,000 µg/g of extractable organics. Upon fractionation, the majority of this material was found in LC-6 and LC-1, and was comprised of phenols, heterocyclic nitrogen compounds or amines; and non-polar, non-volatile aliphatics. The chromatographable halogen content was ∿35 µg/g.

TABLE 4-31. GASIFIER ASH TOTAL ELEMENT AND TOTAL SOLUBLE ELEMENT CONCENTRATIONS

ELEMENT	TOTAL	SOLUBLE	PERCENT SOLUBLE	ELEMENT	TOTAL	SOLUBLE	PERCENT SOLUBLE
Aluminum	88,000	4.4	0.005	Molybdenum	15	0.26	1.8
Antimony	<0.4	<0.24	<1	Neodymium	30	<0.004	<0.01
Arsenic	30	0.24	0.08	Nickel	75	0.69	0.9
Barium	5,500	17	0.3	Niobium	31	<0.005	<0.01
Beryllium	9	<0.004	<0.05	Osmium	<0.1		
Bismuth	<0.1			Palladium	<0.1		
Boron	210	2.8	1.3	Phosphorus	2,000	1.2	0.05
Bromine	2	0.07	3.5	Platinum	0.1		
Cadmium	0.8	<0.12	<1.5	Potassium	>8,600	<200	<2
Calcium	48,000	<250	<0.5	Praseodymium	16	<0.004	<0.03
Cerium	110	0.06	0.06	Rhenium	<0.1		
Cesium	8	0.005	0.05	Rubidium	47	0.39	0.8
Chlorine	170	20	12	Ruthenium	<0.1		
Chromium	100	0.006	0.006	Samarium	13	<0.004	<0.03
Cobalt	23	0.12	0.5	Scandium	20	0.004	0.02
Copper	81	1.9	2.3	Selenium	15	0.09	0.6
Dysprosium	7	<0.004	<0.006	Silicon	140,000	200	0.14
Erbium	3	<0.004	<0.1	Silver	0.6	<0.004	0.6
Europium	3	<0.004	<0.1	Sodium	18,400	480	2.6
Fluorine	190	60	31	Strontium	1,900	120	6.3
Gadolinium	4	<0.004	<0.1	Sulfur	9,000	370	4.1
Gallium	9	0.006	0.07	Tantalum	<0.8	<0.004	
Germanium	1	0.024	2.4	Tellurium	<0.1		
Gold	<0.1			Terbium	1	<0.004	<0.4
Hafnium	1	<0.004	<0.4	Thallium	<0.1		
Holmium	4	<0.004	<0.1	Thorium	23	<0.0003	<0.001
Iodine	0.2	<0.004	<2	Thulium	0.4	<0.004	<1
Iridium	<0.1			Tin	1.3	0.77	60
Iron	90,000	39	0.04	Titanium	4,500	1.9	0.04
Lanthanum	110	0.064	0.06	Tungsten	1	0.009	0.9
Lead	5	0.002	0.04	Uranium	16	<0.0003	<0.002
Lithium	48	0.21	0.4	Vanadium	410	0.14	0.03
Lutetium	0.3	<0.004	<1.3	Ytterbium	3	<0.004	<0.1
Magnesium	13,000	<43	<0.3	Yttrium	59	0.12	0.2
Manganese	220	10	4.5	Zinc	20	1.4	6.9
Mercury	1.7	<0.009	<0.5	Zirconium	180	0.084	0.05

Concentrations in equivalent µg per g of solid.

TABLE 4-32. CYCLONE DUST TOTAL ELEMENT AND TOTAL SOLUBLE ELEMENT CONCENTRATIONS

ELEMENT	TOTAL	SOLUBLE	PERCENT SOLUBLE	ELEMENT	TOTAL	SOLUBLE	PERCENT SOLUBLE
Aluminum	12,000	40	0.3	Molybdenum	2	0.031	1.6
Antimony	<0.5	<0.1		Neodymium	3	<0.006	<0.2
Arsenic	63	0.8	1.2	Nickel	4	<0.12	<3
Barium	1,300	18	1.4	Niobium	5	<0.006	<0.1
Beryllium	0.4	<0.006	<1.5	Osmium	<0.1		
Bismuth	0.3	<0.006	<2	Palladium	<0.1		
Boron	112	3.8	3.4	Phosphorus	590	8.4	1.4
Bromine	9	<0.46	5	Platinum	<0.1		
Cadmium	2	<0.13	<0.7	Potassium	>1,300	>200	
Calcium	29,000	>290	>1	Praseodymium	<0.1		
Cerium	15	0.008	0.05	Rhenium	<0.1		
Cesium	0.7	0.07	10	Rubidium	3	0.42	0.14
Chlorine	120	64	53	Ruthenium	<0.1		
Chromium	11	<0.013	<0.12	Samarium	2		
Cobalt	5	0.041	0.8	Scandium	5		
Copper	30	0.022	0.07	Selenium	14	0.011	0.08
Dysprosium	0.6	<0.006	<1	Silicon	18,000	>200	>1.1
Erbium	0.3	<0.006	<2	Silver	2	<0.008	<0.4
Europium	0.4	<0.006	<1.5	Sodium	11,400	>460	>4.0
Fluorine	280	83	30	Strontium	1,400	140	10
Gadolinium	0.4	<0.006	<1.5	Sulfur	11,000	>160	>1.5
Gallium	33	0.04	0.12	Tantalum	<0.1		
Germanium	6	0.037	0.6	Tellurium	0.2	<0.006	<3
Gold	<0.1			Terbium	0.1	<0.006	<6
Hafnium	<0.1			Thallium	0.9	<0.006	<0.7
Holmium	0.4	<0.006	<1.5	Thorium	2	<0.002	<0.1
Iodine	0.4	0.015	3.8	Thulium	<0.1		
Iridium	<0.1			Tin	52	5.4	10
Iron	9,200	20	0.2	Titanium	400	1.2	0.3
Lanthanum	8	<0.006	<0.08	Tungsten	<0.7		
Lead	8	0.18	2.3	Uranium	0.9	<0.002	<2
Lithium	6	0.86	14	Vanadium	19	0.032	0.17
Lutetium	<0.1			Ytterbium	0.6	<0.007	<1.2
Magnesium	7,800	>60	>0.8	Yttrium	13	0.45	0.3
Manganese	19	1.9	10	Zinc	160	0.82	0.5
Mercury	<2.3	<0.004		Zirconium	29	0.59	2.0

Concentrations in equivalent µg per g of solid.

Gross alpha and beta radioactivity was determined for the gasifier ash, cyclone dust, and lignite. In addition, gamma and alpha spectrometry was used to perform specific isotope analyses for each solid. Complete results for these determinations are provided in Appendix D. To provide a basis for comparison of the radioactivity results to the total element concentrations in Table 4-27, the weight fraction of each isotope of uranium and thorium was calculated from:

$$W = \frac{A\ M}{N_o\ \lambda}$$

where: W = mass of nuclide per unit of mass of sample

A = activity of nuclide per unit mass of sample

= Ci/g x 3.7×10^{10} atoms/sec/Ci

M = nuclide mass (grams/mole)

N_o = Avogadro constant

λ = Decay constant

$$= \frac{\ln 2}{t_{1/2}}$$

$t_{1/2}$ = nuclide halflife in sec

The individual isotopes of each element were then summed to give an estimate of the total element concentration. Table 4-33 presents the results of this isotopic analysis and the SSMS results for uranium and thorium. In general, the results from the two techniques agree within the accepted confidence limits for the analysis techniques. In Table 4-34 the measured isotopic concentrations for the three isotopes of uranium are presented as isotopic abundances along with the natural isotopic abundances. The individual isotopes are present in the samples at approximately their natural abundance. The apparent enrichment of U^{235} in the cyclone dust is due to the scatter in the counting measurement in the technique.

Specific isotopes identified in the specific isotope analysis, which decay by alpha and beta emissions, were summed to give an estimate of gross alpha and beta radioactivity. Except for the beta activity of the gasifier ash, these estimates compared well with the measured values as seen in Table 4-35.

TABLE 4-33. COMPARISON OF ISOTOPE ANALYSIS AND SSMS

		Feed Coal (µg/g)	Cyclone Dust (µg/g)	Gasifier Ash (µg/g)
Uranium	IA	0.6	2.4	16
	SSMS	<.9	0.9	16
Thorium	IA	1.1	3.8	24
	SSMS	<1.0	2.0	23

TABLE 4-34. ABUNDANCES FOR URANIUM ISOTOPES

	Natural Abundances (%)	Feed Coal (%)	Cyclone Dust (%)	Gasifier Ash (%)
U^{234}	.0056	.0055	.0046	.0052
U^{235}	.72	1.06	7.56	.85
U^{238}	99.27	98.94	92.43	99.14

TABLE 4-35. GROSS ALPHA AND BETA ANALYSIS AND SPECIFIC ISOTOPE ANALYSIS COMPARISON

	ALPHA RADIATION*		BETA RADIATION*	
	Gross	Specific Isotope	Gross	Specific Isotope
Feed Coal	1.7 ± 3.6	1.5 ± 1.1	0 ± 13	1.6 ± 1.9
Cyclone Dust	11 ± 6	7.4 ± 1.9	0 ± 15	3.9 ± 1.0
Gasifier Ash	46 ± 11	32 ± 2	52 ± 15	1.0 ± 0.8

*pCi/g.

REFERENCES

1. Environmental Protection Agency. Hazardous Waste, Proposed Guidelines and Regulations and Proposal on Identification and Listing. Federal Register, 43(243):58946-59028, 1978.

2. Thomas, W. C., K. N. Trede, and G. C. Page. Environmental Assessment: Source Test and Evaluation Report--Wellman-Galusha (Glen Gery) Low-Btu Gasification. EPA-600/7-79-185. Radian Corporation, Austin, Texas, August 1979.

3. Lentzen, D. E., D. E. Waggoner, E. D. Estes, and W. F. Gutknecht. IERL-RTP Procedures Manual: Level 1 Environmental Asssessment. EPA-600/7-78-201. Research Triangle Institute, Research Triangle Park, North Carolina, January 1979.

4. Cleland, J. G., and G. L. Kingsbury. Multimedia Environmental Goals for Environmental Assessment, Volumes I & II, Final Report. EPA-600/7-77-136a, Research Triangle Institute, Research Triangle Park, North Carolina, November 1977.

5. Kingsbury, G. L., and J. B. White. Multimedia Environmental Goals for Environmental Assessment: Volume III. MEG Charts and Background Information Summaries (Categories 1-12). EPA-600/7-79-176a, Research Triangle Institute, Research Triangle Park, North Carolina, August 1979.

6. Kingsbury, G. L., R. C. Sims, and J. B. White. Multimedia Environmental Goals for Environmental Assessment: Volume IV. MEG Charts and Background Information Summaries (Categories 13-26). EPA-600/7-79- 176b. Research Triangle Institute, Research Triangle Park, North Carolina, August 1979.

7. Schalit, L. M., and K. J. Wolfe. SAM/IA: A Rapid Screening Method for Environmental Assessment of Fossil Energy Process Effluents. EPA-600/7-78-015. Acurex Corporation/Aerotherm Division, Mountain View, California, February 1978.

8. Harris, J. C., M. J. Hayes, P. L. Levins, and D. B. Lindsay. EPA/IERL-RTP Procedures for Level 2 Sampling and Analysis of Organic Materials. EPA-600/7-79-033. Arthur D. Little, Inc., Cambridge, Massachusetts, February, 1979.

APPENDIX A
PROCESS MATERIAL AND ENERGY BALANCES

This appendix contains the process data characterizing the lignite gasification test run conducted by the Bureau of Mines in December of 1978. From this data, the process operation during the sampling periods was characterized and the effluent flow rates were developed.

Material and energy balance data provided by the Bureau of Mines for the lignite gasification test run conducted by the Bureau from December 11, 1978 through December 14, 1978 are presented in the following Tables A-1 through A-5. This information was developed from process data collected, stored, and calculated by the Bureau of Mines data acquisition system. Each table represents information averaged over distinct operating periods. The information contained in Tables A-1 through A-5 was used to develop most of the process data presented in Section 2.0 of this report.

Material balances presented in Tables A-6 and A-7 for carbon, hydrogen, oxygen, nitrogen, sulfur, ash, and total mass for the process streams during the two major sampling time periods were calculated from the Bureau of Mines material balances (Tables A-2, A-3, and A-4). Figure A-1 shows the relationship between the two sampling time periods and the Bureau material balance time periods. The first sampling time period 1430 to 2130 on December 12, 1978, occurred during the plant operating time period covered by Table A-2 and this table was used directly to obtain Table A-6. The second sampling time period, 1600 to 0300 on December 13 and 14, 1978 occurred during the plant operating time periods covered by Table A-3 and A-4. The data from these tables were simply averaged to obtain Table A-7. Table A-8 contains the flow rate data used in calculating Tables A-6 and A-7 as well as the calculated flow rates excluding moisture which were used in the body of this report to calculate mass flow. Gasifier ash sluice water and cyclone dust quench water rates (not part of Tables A-6 and A-7) were estimated at 0.007 ℓ/s ($\sim$7 gph) each. These estimates were made from visual observations during the test run.

The test burner flue gas rate and composition presented in Table A-9 were estimated from process and sampling data because no direct measurement was made. The product gas rate to the burner was estimated by subtracting the product gas flow rate measured to the kiln from the total product gas produced as calculated by the Bureau material balances. The natural gas rate to the burner pilot and the combustion air rates to the burner were estimated using the design flow rates for the test burner. From this data and the product gas composition measured by GC analysis taken at 2010 on December 12, 1978, the test burner flue gas rate and composition was calculated. The estimated test burner dry flue gas composition compares favorably to the GC analysis of a sample taken at 2006 on December 12, 1978. This close agreement between the estimated and measured flue gas composition supports the assumptions.

TABLE A-1. PROCESS DATA SEGMENT 1, 12-11-78

GASIFIER MASS BALANCE- GKP-29 INDIANHEAD LIGNITE 12/11(345)-21:30 TO 346-01:30

INPUT(LBS/HR)	C	H	O	N	S	ASH	TOTAL
COAL	1833.2	263.1	1637.2	25.6	34.2	315.9	4101.0
STEAM	.0	97.2	770.0	.0	.0	.0	866.8
DRY AIR	.8	.0	1537.2	4996.7	.0	.0	6618.0
TOTAL	1834.0	360.3	3940.5	5022.4	34.2	315.9	11585.7

OUTPUT(LBS/HR)	C	H	O	N	S	ASH	TOTAL
DRY GAS	1701.1	160.6	2488.8	4768.9	27.3	1.4	9234.9
BOT ASH	24.4	1.4	7.0	.3	5.2	309.5	347.8
CYC DUST	29.0	1.9	8.2	.4	.5	5.0	45.0
WATER	.0	184.9	1463.4	.0	.0	.0	1647.2
TAR	128.2	12.7	13.9	2.8	1.1	.0	159.0
TOTAL	1882.7	361.4	3981.3	4772.4	34.2	315.9	11434.0

OPERATING DATA

COAL ANALYSIS	
C	64.40
H	4.10
O	18.20
N	.90
S	1.20
MOISTURE	30.60
ASH	11.10
HHV	10886.
LHV	10373.

GAS ANALYSIS	
O2	.000
A	.571
CO2	5.547
H2O	19.400
CALC H2O	19.229
H2	44.789
H2S	.224
CALC H2S	.224
CH4	1.505
C2H6	.098
H2	17.208
CO	29.843
C2H4	.093
GMS TAR/DRY SCF	.500

GAS PRODUCTION	WET SCFH	DRY SCFH
MEASURED	179000.	144274.
/SQ.FT.GRATE	5394.82	4348.22
/LB RAW COAL	43.65	35.18
/LB DRY COAL	62.89	50.69
/LB MAF COAL	74.87	60.34
CALCULATED (C BALANCE)	174265.	140458.

AIR:	SCFH	RH
AMBIENT	87720.	50.00
TO GASIFIER	105045.	100.34
WATER(GPH):		
AGITATOR	3.06	
TO SHELL	6.41	
FROM SHELL	4.77	
EVAPORATED	1.64	

	LB/LB
STEAM/RAW COAL	.211
TOTAL WATER/DRY COAL	.746
AIR/RAW COAL	1.625
AIR/DRY COAL	2.341
AIR/MAF COAL	2.787
WATER REACTED/MAF COAL	.199

TABLE A-1. CONTINUED

GASIFIER HEAT BALANCE- GKP-29 INDIANHEAD LIGNITE 12/11(345)-21:30 TO 346-01:30

INPUT(BTU/HR)

	SENSIBLE	COMBUSTION	TOTAL	PCT
COAL	.134367E+05	.309829E+08	.309964E+08	99.97
AIR	.106348E+05	.000000E+00	.106348E+05	.03
TOTAL	.240715E+05	.309829E+08	.310070E+08	100.00

OUTPUT(BTU/HR)

	SENSIBLE	COMBUSTION	TOTAL	PCT
HOT ASH	.786799E+04	.395187E+06	.403055E+06	1.30
CYC DUST	.232370E+04	.465494E+06	.467818E+06	1.51
AGIT H2O	.383357E+05	.000000E+00	.383357E+05	.12
JACKET H2O	.339635E+06	.000000E+00	.339635E+06	1.10
HOT GAS (CYC OUTLET)	.912526E+06	.271573E+08	.280694E+08	90.53
HEAT LOSS	.168831E+07	.000000E+00	.168831E+07	5.44
TOTAL	.298900E+07	.280180E+08	.310070E+08	100.00

OPERATING DATA

INPUT	TEMP(DEG C)
COAL	19.1
AMBIENT AIR	19.1
SATURATED AIR	58.4
AGITATOR H2O	6.0
JACKET H2O	6.0

RAW GAS DATA	BTU/WET SCF	BTU/DRY SCF
AFTER CYC(60.DEG F)	151.72	188.23
AT CHAMB(140.DEG C)	156.13	193.71
AT KILN(147.DEG C)	156.34	194.02
TAR CONTRIBUTION(60 F)	13.72	17.02(15441 BTU/LB TAR)

OUTPUT	
HOT ASH	78.4
CYC DUST	159.0
AGITATOR H2O	19.9
JACKET H2O	85.0
GASER OUTLET	164.0
CYCLONE OUTLET	159.0
MAIN FLOW	150.0
KILN FLOW	150.0

TRANSMISSION LOSSES	BTU/HR	PCT
CYCLONE	.32294E+05	21.72
CYC-MAIN FLOW	.58046E+05	39.04
MAIN FLOW-COMB CHAMB	.55739E+05	37.49
MAIN FLOW-KILN FLOW	.31002E-01	.00
KILN FLOW-KILN	.25910E+04	1.74

TABLE A-2. PROCESS DATA SEGMENT 2, 12-12-78

GASIFIER MASS BALANCE- GKP-29 INDIANHEAD LIGNITE 12/12(346)-13:30 TO 21:00

INPUT(LBS/HR)	C	H	O	N	S	ASH	TOTAL
COAL	1144.3	164.2	1019.5	16.0	21.3	197.2	2560.0
STEAM	.0	59.2	469.1	.0	.0	.0	528.1
DRY AIR	.5	.0	921.9	2996.7	.0	.0	3969.0
TOTAL	1144.8 ± 160	223.4 ± 25	2410.6 ± 1200	3012.7 ± 420	21.3 ± 3.0	197.2	7057.0

OUTPUT(LBS/HR)	C	H	O	N	S	ASH	TOTAL
DRY GAS	1047.8	101.3	1553.8	2963.1	17.0	1.5	5736.2
HOT ASH	15.1	.9	4.3	.2	3.2	192.4	216.2
CYC DUST 15%	19.3	1.3	5.5	.3	.4	3.3	30.0
WATER 10%	.0	114.6	907.5	.0	.0	.0	1021.5
TAR 10%	79.5	7.9	9.4	1.8	.7	.0	98.6
TOTAL	1161.8	225.9	2479.4	2965.4	21.3	197.2	7102.5

OPERATING DATA

COAL ANALYSIS	
C	64.40
H	4.30
O	14.20
N	.90
S	1.20
MOISTURE	30.60
ASH	11.10
HHV	10886.
LHV	10373.

GAS ANALYSIS		
	O2	.000
	A	.553
	CO2	6.203
	H2O	19.400
CALC	H2O	18.829
	N2	44.879
	H2S	.225
CALC	H2S	.225
	CH4	1.521
	C2H6	.103
	H2	17.421
	CO	28.806
	C2H4	.145
GMS TAR/DRY SCF		.500

GAS PRODUCTION	WET SCFH	DRY SCFH
MEASURED	111000.	89466.
/SQ.FT.GRATE	3345.39	2696.38
/LB RAW COAL	43.36	34.95
/LB DRY COAL	62.48	50.36
/LB MAF COAL	74.37	59.94
CALCULATED	109339.	88127.
(C BALANCE)		

AIR:	SCFH	RH
AMBIENT	52608.	50.00
TO GASIFIER	63172.	100.49
WATER(GPM):		
AGITATOR	3.45	
TO SHELL	5.00	
FROM SHELL	4.00	
EVAPORATED	1.00	

	LB/LB
STEAM/RAW COAL	.206
TOTAL WATER/DRY COAL	.738
AIR/RAW COAL	1.551
AIR/DRY COAL	2.249
AIR/MAF COAL	2.677
WATER REACTED/MAF COAL	.195

TABLE A-2. CONTINUED

GASIFIER HEAT BALANCE- GKP-24 INDIANHEAD LIGNITE 12/12(346)-13:30 TO 21:00

INPUT(BTU/HR)

	SENSIBLE	COMBUSTION	TOTAL	PCT
COAL	.957241E+04	.193407E+08	.193503E+08	99.96
AIR	.727954E+04	.000000E+00	.727954E+04	.04
TOTAL	.168520E+05	.193407E+08	.193576E+08	100.00

OUTPUT(BTU/HR)

	SENSIBLE	COMBUSTION	TOTAL	PCT
HOT ASH	.489869E+04	.245557E+06	.250556E+06	1.29
CYC DUST	.120354E+04	.310440E+06	.311533E+06	1.61
AGIT H2O	.251867E+05	.000000E+00	.251867E+05	.13
JACKET H2O	.302836E+06	.000000E+00	.302836E+06	1.56
HOT GAS (CYC OUTLET)	.438991E+06	.167033E+08	.171423E+08	88.56
HEAT LOSS	.132514E+07	.000000E+00	.132514E+07	6.85
TOTAL	.209826E+07	.172593E+08	.193576E+08	100.00

****

OPERATING DATA

INPUT	TEMP(DEG C)
COAL	19.6
AMBIENT AIR	19.6
SATURATED AIR	58.5
AGITATOR H2O	6.0
JACKET H2O	6.1

OUTPUT	
HOT ASH	78.5
CYC DUST	127.0
AGITATOR H2O	14.1
JACKET H2O	90.1
GASER OUTLET	143.0
CYCLONE OUTLET	127.0
MAIN FLOW	120.0
KILN FLOW	115.0

RAW GAS DATA	BTU/WET SCF	BTU/DRY SCF
AFTER CYC(60.DEG F)	150.48	186.70
AT CHAMB(110.DEG C)	153.83	190.85
AT KILN(112.DEG C)	153.90	190.94
TAR CONTRIBUTION(60 F)	13.72	17.02(15441 BTU/LB TAR)

TRANSMISSION LOSSES	BTU/HR	PCT
CYCLONE	.63477E+05	49.21
CYC-MAIN FLOW	.27878E+05	21.48
MAIN FLOW-COMB CHAMB	.31249E+05	24.07
MAIN FLOW-KILN FLOW	.42553E+04	3.28
KILN FLOW-KILN	.25510E+04	1.97

TABLE A-3. PROCESS DATA SEGMENT 3, 12-13-78

GASIFIER MASS BALANCE- BKP-20 INDIANHEAD LIGNITE 12/13(347)-1813Z TO 2013Z

INPUT(LBS/HR)	C	H	O	N	S	ASH	TOTAL
COAL	840.4	120.6	748.7	11.7	15.7	144.8	1880.0
STEAM	.0	50.1	396.8	.0	.0	.0	445.6
DRY AIR	.4	.0	693.6	2254.5	.0	.0	2948.0
TOTAL	840.8	170.7	1839.1	2266.2	15.7	144.8	5412.6

OUTPUT(LBS/HR)	C	H	O	N	S	ASH	TOTAL
DRY GAS	754.2	73.0	1119.9	2135.7	12.5	1.7	4135.6
BOT ASH	11.1	.6	3.2	.2	2.4	140.9	158.3
CYC DUST	12.9	.9	3.6	.2	.2	2.2	20.0
WATER	.0	98.5	780.0	.0	.0	.0	878.0
TAR	57.3	5.7	6.2	1.3	.5	.0	71.1
TOTAL	836.5	178.7	1912.9	2137.4	15.7	144.8	5262.9

****

OPERATING DATA

COAL ANALYSIS

C	64.40
H	4.30
O	18.20
N	.90
S	1.20
MOISTURE	30.40
ASH	11.10
HHV	10886.
LHV	10373.

GAS ANALYSIS

O2	.000
A	.577
CO2	6.203
H2O	22.300
CALC H2O	19.022
N2	44.875
H2S	.230
CALC H2S	.230
CH4	1.521
C2H6	.103
H2	17.419
CO	28.803
C2H4	.145
GMS TAR/DRY SCF	.500

GAS PRODUCTION

	WET SCFH	DRY SCFH
MEASURED	83000.	64491.
/SQ.FT.GRATE	2501.51	1943.67
/LB RAW COAL	44.15	34.30
/LB DRY COAL	63.62	49.43
/LB MAF COAL	75.73	58.84
CALCULATED (C BALANCE)	83429.	64824.

AIR:	SCFH	RH
AMBIENT	39482.	50.00
TO GASIFIER	48567.	100.69

WATER(GPM):	
AGITATOR	3.50
TO SHELL	6.06
FROM SHELL	5.20
EVAPORATED	.86

	LB/LB
STEAM/RAW COAL	.238
TOTAL WATER/DRY COAL	.744
AIR/RAW COAL	1.597
AIR/DRY COAL	2.301
AIR/MAF COAL	2.739
WATER REACTED/MAF COAL	.132

TABLE A-3. CONTINUED

GASIFIER HEAT BALANCE- GKP-29 INDIANHEAD LIGNITE 12/13(347)-10:30 TO 20:30

INPUT(BTU/HR)

	SENSIBLE	COMBUSTION	TOTAL	PCT
COAL	.243607E+03	.142033E+08	.142036E+08	100.00
AIR	.185649E+03	.000000E+00	.185649E+03	.00
TOTAL	.429256E+03	.142033E+08	.142038E+08	100.00

OUTPUT(BTU/HR)

	SENSIBLE	COMBUSTION	TOTAL	PCT
BOT ASH	.368367E+04	.179858E+06	.183552E+06	1.29
CYC DUST	.715960E+03	.206886E+06	.207602E+06	1.46
AGIT H2O	.340690E+05	.000000E+00	.340690E+05	.24
JACKET H2O	.419463E+06	.000000E+00	.419463E+06	2.95
HOT GAS (CYC OUTLET)	.293459E+06	.120414E+08	.123349E+08	86.84
HEAT LOSS	.102418E+07	.000000E+00	.102418E+07	7.21
TOTAL	.177557E+07	.124282E+08	.142038E+08	100.00

OPERATING DATA

INPUT	TEMP(DEG C)
COAL	15.7
AMBIENT AIR	15.7
SATURATED AIR	60.2
AGITATOR H2O	6.0
JACKET H2O	5.5

OUTPUT	
BOT ASH	80.2
CYC DUST	115.0
AGITATOR H2O	16.8
JACKET H2O	95.0
GASFR OUTLET	130.0
CYCLONE OUTLET	115.0
MAIN FLOW	110.0
KILN FLOW	115.0

RAW GAS DATA	BTU/WET SCF	BTU/DRY SCF
AFTER CYC(60.DEG F)	145.04	186.72
AT CHAMB(100.DEG C)	148.08	190.57
AT KILN(115.DEG C)	148.61	191.27
TAR CONTRIBUTION(60 F)	13.23	17.02(15441 BTU/LB TAR)

TRANSMISSION LOSSES	BTU/HR	PCT
CYCLONE	.44804E+05	50.08
CYC-MAIN FLOW	.14903E+05	16.66
MAIN FLOW-COMB CHAMB	.29758E+05	33.26
MAIN FLOW-KILN FLOW	-.1796E+00	-.00
KILN FLOW-KILN	.00000E+00	.00

TABLE A-4. PROCESS DATA SEGMENT 4, 12-13-78

GASIFIER MASS BALANCE- AKP-P8 INDIANHEAD LIGNITE 12/13(347)-2013Z TO 12/14-1313Z

INPUT(LBS/HR)	C	H	O	N	S	ASH	TOTAL
COAL	938.7	134.7	836.3	13.1	17.5	161.8	2100.0
STEAM	.0	66.9	529.7	.0.	.0	.0	596.3
DRY AIR	.5	.0	943.7	3057.4	.0	.0	4062.6
TOTAL	939.2	201.6	2309.7	3040.5	17.5	161.8	6758.9

OUTPUT(LBS/HR)	C	H	O	N	S	ASH	TOTAL
DRY GAS	892.0	86.2	1322.7	2522.4	13.9	1.1	4838.1
BOT ASH	12.4	.7	3.5	.2	2.7	157.9	177.4
CYC DUST	16.1	1.1	4.6	.2	.3	2.8	25.0
WATER	.0	114.3	920.9	.0	.0	.0	1036.6
TAR	67.7	6.7	7.4	1.5	.6	.0	83.9
TOTAL	988.2	211.0	2259.0	2524.3	17.5	161.8	6205.0

OPERATING DATA

COAL ANALYSIS	
C	64.40
H	4.30
O	18.20
N	.90
S	1.20
MOISTURE	30.60
ASH	11.10
HHV	10846.
LHV	10373.

GAS ANALYSIS	
O2	.080
A	.665
CO2	6.204
H2O	22.300
CALC H2O	19.939
N2	44.887
H2S	.217
CALC H2S	.217
CH4	1.521
C2H6	.103
H2	17.424
CO	28.811
C2H4	.146
GMS TAR/DRY SCF	.500

GAS PRODUCTION	WET SCFH	DRY SCFH
MEASURED	94000.	76145.
/SQ.FT.GRATE	2943.59	2384.94
/LB RAW COAL	44.67	36.26
/LB DRY COAL	67.24	52.25
/LB MAF COAL	80.05	62.20
CALCULATED (C BALANCE)	93030.	72284.

AIR:	SCFH	RH
AMBIENT	53684.	50.00
TO GASIFIER	65837.	94.90
WATER(GPM):		
AGITATOR	3.50	
TO SHELL	8.40	
FROM SHELL	7.65	
EVAPORATED	1.15	

	LB/LB
STEAM/RAW COAL	.284
TOTAL WATER/DRY COAL	.850
AIR/RAW COAL	1.944
AIR/DRY COAL	2.401
AIR/MAF COAL	3.335
WATER REACTED/MAF COAL	.166

TABLE A-4. CONTINUED

GASIFIER HEAT BALANCE- GKP-29 INDIANHEAD LIGNITE 12/13(347)-20:30 TO 12/14-13:30

INPUT(BTU/HR)

	SENSIBLE	COMBUSTION	TOTAL	PCT
COAL	-.147719E+04	.158654E+08	.158640E+08	100.01
AIR	-.140244E+04	.000000E+00	-.140288E+04	-.01
TOTAL	-.288006E+04	.158654E+08	.158626E+08	100.00

OUTPUT(BTU/HR)

	SENSIBLE	COMBUSTION	TOTAL	PCT
HOT ASH	.416644E+04	.201570E+06	.205737E+06	1.30
CYC DUST	.120995E+04	.258608E+06	.259818E+06	1.64
AGIT H2O	.249208E+05	.000000E+00	.249208E+05	.16
JACKET H2O	.617095E+06	.000000E+00	.617095E+06	3.89
HOT GAS (CYC OUTLET)	.470442E+06	.142145E+08	.146850E+08	92.58
HEAT LOSS	.700226E+05	.000000E+00	.700226E+05	.44
TOTAL	.118786E+07	.146747E+08	.158626E+08	100.00

OPERATING DATA

INPUT	TEMP(DEG C)
COAL	14.8
AMBIENT AIR	14.8
SATURATED AIR	60.8
AGITATOR H2O	6.0
JACKET H2O	5.7

OUTPUT	
HOT ASH	80.9
CYC DUST	150.0
AGITATOR H2O	13.9
JACKET H2O	95.2
GASEN OUTLET	167.0
CYCLONE OUTLET	150.0
MAIN FLOW	135.0
KILN FLOW	150.0

RAW GAS DATA	BTU/WET SCF	BTU/DRY SCF
AFTER CYC(60.DEG F)	145.05	186.67
AT CHAMB(120.DEG C)	148.76	191.46
AT KILN(150.DEG C)	149.85	192.85
TAR CONTRIBUTION(60 F)	13.23	17.02(15441 BTU/LB TAR)

TRANSMISSION LOSSES	BTU/HR	PCT
CYCLONE	.60447E+05	36.24
CYC-MAIN FLOW	.53154E+05	31.91
MAIN FLOW-COMB CHAMB	.52985E+05	31.81
MAIN FLOW-KILN FLOW	-.5424E+00	-.00
KILN FLOW-KILN	.00000E+00	.00

TABLE A-5. PROCESS DATA SEGMENT 5, 12-14-78

GASIFIER MASS BALANCE- GKP-29 INDIANHEAD LIGNITE 12/14(349)-16:30 TO 349-00:30

INPUT(LBS/HR)	C	H	O	N	S	ASH	TOTAL
COAL	1537.7	220.7	1370.0	21.5	28.7	265.0	3440.0
STEAM	.0	91.1	721.9	.0	.0	.0	812.5
DRY AIR	.7	.0	1361.8	4426.4	.0	.0	5862.6
TOTAL	1538.4	311.8	3453.6	4447.9	28.7	265.0	10115.2

OUTPUT(LBS/HR)	C	H	O	N	S	ASH	TOTAL
DRY GAS	1419.7	137.3	2105.1	4014.7	22.9	1.3	7771.0
BOT ASH	20.4	1.2	5.9	.3	4.4	259.8	291.9
CYC DUST	22.5	1.5	6.4	.3	.4	3.9	35.0
WATER	.0	185.1	1465.0	.0	.0	.0	1650.1
TAR	107.7	10.7	11.7	2.4	.9	.0	133.6
TOTAL	1570.4	335.7	3595.0	4017.7	28.7	265.0	9881.7

OPERATING DATA

COAL ANALYSIS	
C	64.40
H	4.30
O	18.20
N	.90
S	1.20
MOISTURE	30.60
ASH	11.10
HHV	10886.
LHV	10373.

GAS ANALYSIS	
O2	.000
A	.602
CO2	6.203
H2O	22.300
CALC H2O	18.536
N2	44.881
H2S	.224
CALC H2S	.224
CH4	1.521
C2H6	.103
H2	17.421
CO	28.807
C2H4	.145
GMS TAR/DRY SCF	.500

GAS PRODUCTION	WET SCFH	DRY SCFH
MEASURED	156000.	121212.
/SQ.FT.GRATE	4701.63	3653.17
/LB RAW COAL	45.35	35.24
/LB DRY COAL	65.34	50.77
/LB MAF COAL	77.79	60.44
CALCULATED (C BALANCE)	152756.	118691.

AIR:	SCFH	RH
AMBIENT	77518.	50.00
TO GASIFIER	93998.	100.85

WATER(GPM):	
AGITATOR	3.50
TO SHELL	6.41
FROM SHELL	4.85
EVAPORATED	1.56

	LB/LB
STEAM/RAW COAL	.236
TOTAL WATER/DRY COAL	.782
AIR/RAW COAL	1.713
AIR/DRY COAL	2.469
AIR/MAF COAL	2.939
WATER REACTED/MAF COAL	.108

TABLE A-5. CONTINUED

GASIFIER HEAT BALANCE- GKP-29 INDIANHEAD LIGNITE 12/14(348)-16:30 TO 349-00:30

INPUT(BTU/HR)

	SENSIBLE	COMBUSTION	TOTAL	PCT
COAL	.127359E+03	.259431E+08	.259558E+08	100.00
AIR	.984440E+02	.000000E+00	.984440E+02	.00
TOTAL	.226203E+03	.259891E+08	.259893E+08	100.00

OUTPUT(BTU/HR)

	SENSIBLE	COMBUSTION	TOTAL	PCT
HOT ASH	.655846E+04	.331671E+06	.338337E+06	1.30
CYC DUST	.208892E+04	.362051E+06	.364060E+06	1.40
AGIT H2O	.151418E+05	.000000E+00	.151418E+05	.06
JACKET H2O	.377679E+06	.000000E+00	.377679E+06	1.45
HOT GAS (CYC OUTLET)	.890170E+06	.226298E+08	.235199E+08	90.50
HEAT LOSS	.137417E+07	.000000E+00	.137417E+07	5.29
TOTAL	.266583E+07	.233235E+08	.259893E+08	100.00

****

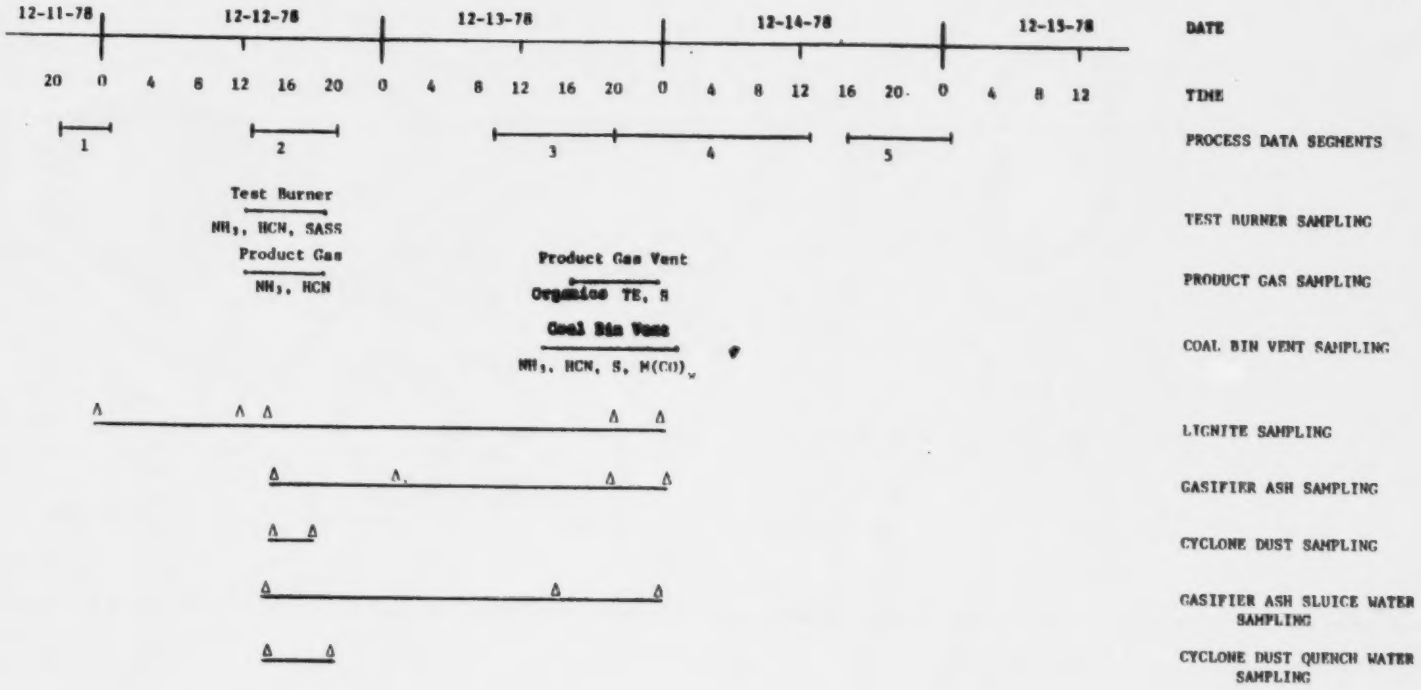
OPERATING DATA

INPUT	TEMP(DEG C)
COAL	15.6
AMBIENT AIR	15.6
SATURATED AIR	59.0
AGITATOR H2O	6.0
JACKET H2O	5.7

OUTPUT	
HOT ASH	79.0
CYC DUST	175.0
AGITATOR H2O	10.8
JACKET H2O	92.1
GASER OUTLET	167.0
CYCLONE OUTLET	175.0
MAIN FLOW	165.0
KILN FLOW	175.0

RAW GAS DATA	BTU/WET SCF	BTU/DRY SCF
AFTER CYC(60.DEG F)	145.05	196.70
AT CHAMB(150.DEG C)	149.86	192.87
AT KILN(175.DEG C)	150.77	194.04
TAR CONTRIBUTION(60 F)	13.23	17.02(15441 BTU/LB TAR)

TRANSMISSION LOSSES	BTU/HR	PCT
CYCLONE	.68224E+05	32.52
CYC-MAIN FLOW	.56721E+05	27.04
MAIN FLOW-COMB CHAMB	.84854E+05	40.45
MAIN FLOW-KILN FLOW	-.3636E+00	-.00
KILN FLOW-KILN	.00000E+00	.00



Δ - Grab Samples

Figure A-1. Process Data and Sampling Periods

TABLE A-6. MATERIAL BALANCES FOR FT. SNELLING PROCESS STREAMS

	SAMPLING PERIOD 1 - 1430 to 2130 on 12/12/78						
	C	H	O	N	S	Ash	TOTAL
Input (g/sec)							
Coal	140	21	130	2	2.7	25	320 ± 28
Steam		7.5	59				67 ± 8.4
Dry Air	.06	120	120	380			500 ± 55
Total	140 ± 20	28 ± 3.2	304 ± 25	380 ± 25	2.7 ± .4	25 ± 2.8	890 ± 92
Output (g/sec)							
Product Gas -							
Dry Gas	130	13	200	370	2.1	.19	720 ± 63
Moisture		14	110				130 ± 16
Tar	10	1.0	1.1	.23	.09		12 ± 1.4
Gasifier Ash	1.9	.11	.54	.03	0.4	24	27 ± 2.8
Cyclone Dust	2.4	.16	.69	.04	.05	.42	3.8 ± 1.3
Total	150 ± 19	28 ± 2.8	310 ± 32	370 ± 53	2.7 ± 0.3	25 ± 2.8	900 ± 84

TABLE A-7. MATERIAL BALANCES FOR FT. SNELLING PROCESS STREAMS

	SAMPLING PERIOD 2 - 1600 to 0300 on 12/13-14/78						
	C	H	O	N	S	Ash	TOTAL
Input (g/sec)							
Coal	110	16	100	1.6	2.1	19	250 ± 21
Steam		7.4	58				66 ± 8.3
Dry Air	.06		103	340			444 ± 49
Total	110 ± 16	23 ± 2.5	260 ± 21	340 ± 48	2.1 ± 0.3	19 ± 2.1	760 ± 79
Output (g/sec)							
Product Gas -							
Dry Gas	104	10	150	290	1.7	.18	570 ± 49
Moisture		14	107				120 ± 15
Tar	7.9	.78	.86	.18	.04		9.8 ± 1.1
Gasifier Ash	1.5	.08	.42	.03	.32	19	21 ± 2.1
Total	110 ± 15	25 ± 2.4	260 ± 26	290 ± 42	2.1 ± 0.3	19 ± 2.1	721 ± 67

TABLE A-8. PROCESS STREAM FLOW RATE DATA

STREAM	Sampling Period 1[1]		Sampling Period 2[2]	
	ACTUAL	WITHOUT MOISTURE	ACTUAL	WITHOUT MOISTURE
Product Gas	0.9 SCM/s	0.73 SCM/s (720 g/s)	0.69 SCM/s	0.57 SCM/s (590 g/s)
Test Burner Flue Gas	7.2 SCM/s	6.77 SCM/s (8080 g/s)		
Gasifier Ash		27 g/s		21 g/s
Cyclone Dust		3.8 g/s		
Gasifier Ash Sluice Water	0.007 ℓ/s (7 g/s)		0.007 ℓ/s (7 g/s)	
Cyclone Dust Quench Water	<0.007 ℓ/s (<7 g/s)			
Lignite	323 g/s	220 g/s	250 g/s	170 g/s

SCM at 25°C (77°F) and 101 kPa (1 atm).

[1]12/12/78.

[2]12/13-14/78.

TABLE A-9. ESTIMATED TEST BURNER FLUE GAS FLOW RATE AND COMPOSITION

COMPONENT	PRODUCT GAS VOL %	PRODUCT GAS SCM/SEC	NATURAL GAS[1] VOL %	NATURAL GAS[1] SCM/SEC	COMBUSTION AIR[1] VOL %	COMBUSTION AIR[1] SCM/SEC	TEST BURNER FLUE GAS[2] SCM/SEC	TEST BURNER FLUE GAS[2] ESTIMATED VOL % NET	TEST BURNER FLUE GAS[2] VOL % DRY
H_2	14.4	.099							
CH_4	1.2	.008	100.0	.024					
CO	22.9	.158							
CO_2	5.7	.039					0.23	3.2	3.4
H_2O	23.7	.163					0.32	4.6	
O_2	0.0				21.0	1.37	1.18	16.6	17.4
N_2	32.1	.221			79.0	5.14	5.36	75.6	79.2
TOTALS	100.0	0.688	100.0	.024	100.0	6.51	7.09	100.0	100.0

SCM at 25°C (77°F) and 101 kPa (1 atm).

[1]Assumed values based on maximum design rates.

[2]GC analysis taken 2006 on 12/12/78 gave CO - 0.0%; CO_2 - 2.9%; O_2 - 17.2%; N_2 - 79.9% (dry basis).

Error Propagation Analyses

An error propagation analysis was used to establish error limits for the calculated total inlet and outlet mass rates of major components. The values indicate the degree of variance to be expected due to random errors and should not be interpreted as variance over a set of data points.

A 95 percent confidence interval of $2S(Q)$ is calculated for a given value of Q according to the following standard definition:

$$S^2(Q) = \sum_i^n \frac{\partial Q}{\partial q_i} \quad S^2(q_i)$$

where:

$S^2(Q)$ = the variance in Q,

Q = the mass flow rate of a given element into or out of the system

q_i = the ith independent measured value (stream flow or elemental concentration), and

$S^2(q_i)$ = the variance of q_i.

The error limits, $2S(q_i)$, for the flow rates and analytical results are listed in Table A-10.

TABLE A-10. ESTIMATED ERROR LIMITS FOR FLOW RATES AND ANALYTICAL RESULTS

STREAM	FLOW RATE ERROR LIMIT 2S (%)
Air	± 10
Steam	± 10
Coal	± 10
Ash	± 10
Dust	± 10
Hot Product Gas	± 10

ELEMENT	ANALYTICAL ERROR LIMIT 2S (%)
C	±10
H	±10
N	±10
O	±10
S	±10
Ash	± 5

APPENDIX B
SAMPLE COLLECTION TECHNIQUES AND FIELD SAMPLING DATA

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B1.0 INTRODUCTION

This appendix describes the techniques used to collect samples for the environmental assessment of the two meter Wellman-Galusha gasifier at the U.S. Bureau of Mines, Fort Snelling Iron Ore Pelletizing pilot plant. Figure B-1 provides a simplified schematic of the facility with sampling points numbered as follows:

Gas streams:

- Test Burner Flue Gas - 9
- Product Gas - 7
- Product Gas (at the start-up/emergency vent) - 7a
- Coal Bin Vent Gas - 8

Solid and liquid streams:

- Lignite - 1
- Gasifier Ash - 2
- Gasifier Ash Sluice Water - 3
- Cyclone Dust - 4
- Cyclone Dust Quench Water - 5
- Service Water - 6

The following sections describe the sample collection techniques used at each location and the on-site sample log is given as Section 6.0.

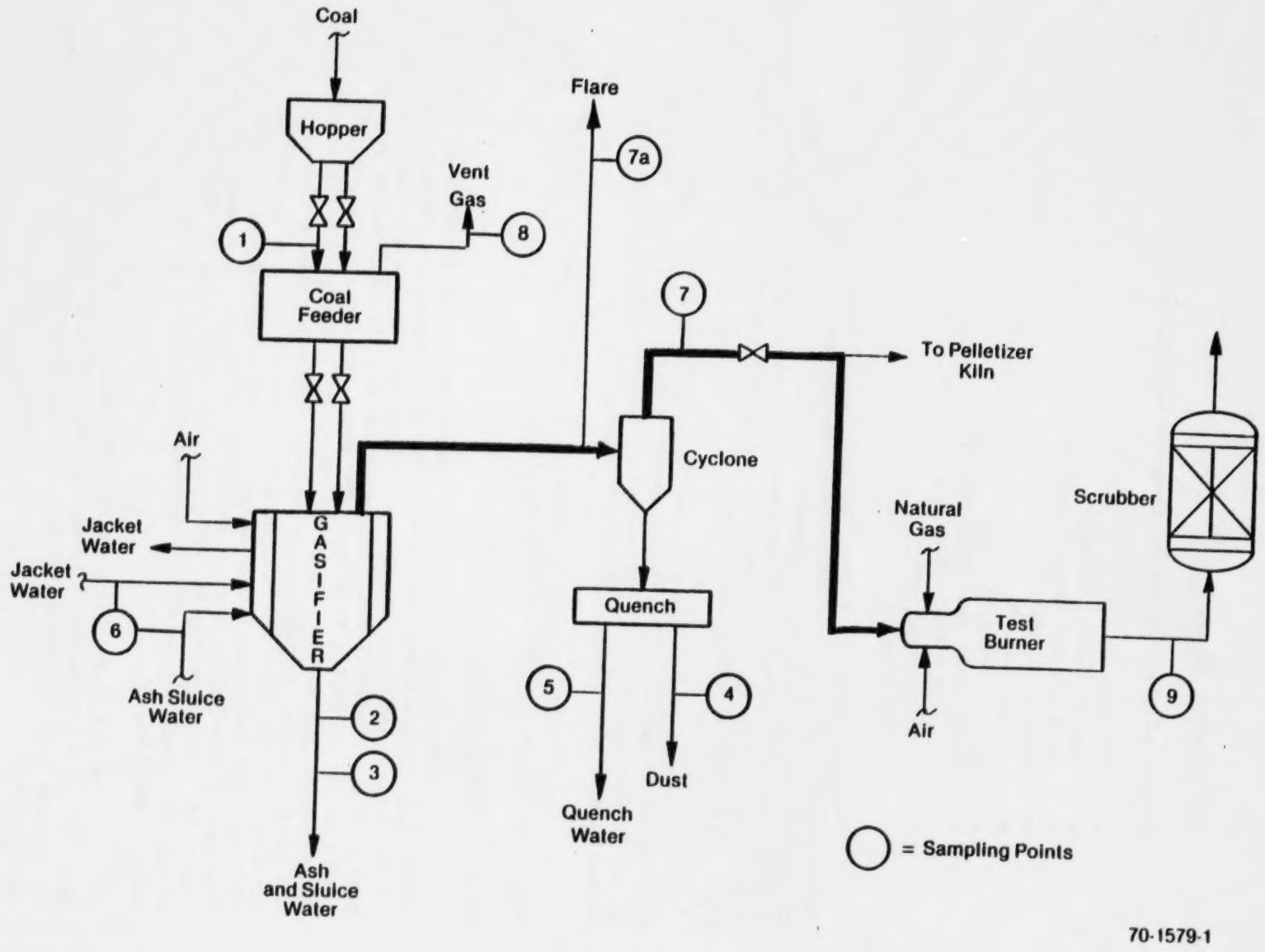

Figure B-1. Operating Schematic of the Wellman-Galusha Gasifier

B2.0 TEST BURNER FLUE GAS - 9

Samples of the test burner flue gas were collected for:

- particulates
- organic characterization
- trace element characterization
- ammonia content
- cyanide content
- moisture content, and
- vapor phase concentration of:
  - C_1-C_6 hydrocarbons
  - sulfur species
  - fixed gases

Original plans were to sample the test burner flue gas at a point downstream of a 90° elbow at the exit of the burner and upstream of a 45° elbow prior to the scrubber. However, some of the quench spray nozzles located just downstream of this point were misdirected and sprayed upstream. These spray nozzles showered the original test plane with quench water which made sampling impractical.

A sight glass located in the 90° elbow and on the burner center line was disassembled and used as a sampling port. This port provided access to a single point in the center of the duct in the transition between the burner chamber and the 90° elbow.

Data from the sampling performed at the test burner exit is presented at the end of this section (Table B-1).

B2.1 Organics and Trace Elements

The EPA-developed Hi Volume Source Assessment Sampling System (SASS train), Figure B-2; was used to collect samples for characterization of the organic and trace element content of the test burner flue gas. The particulate concentration of the gas stream was also determined from the sample collected during this run. The train configuration and method of operation met current specifications (Ref. B-1), except for the location of the XAD-2 canister in the organic module. These procedures currently require that the XAD-2 canister be positioned beneath the gas cooler. In this position large quantities of aqueous and organic phase condensate flow through the XAD-2 resin and are subsequently trapped in a knock-out below the resin. This arrangement could coat the resin early in the sampling effort and result in reduced collection efficiencies for vapor phase organic material.

The modified configuration shown in Figure B-2 traps condensed material before it passes through the resin, thus reducing the possibility of reduced resin collection efficiency. It also simplifies sample recovery and analysis.

TABLE B-1.

TEST BURNER FLUE GAS

Summary:

Flow Rate	- 7.09 m^3/sec (25°C, 101 kPa)[1]
Velocity	- NA
Duct ID	- NA
Temperature	- 440°C (835°F)
Pressure	- Atmospheric
% Moisture	- 13.5% by volume
Sampling Period	- 1442-2115 12 Dec 1978

Sampling Data:

SAMPLE	TIME	DATE	VOLUME (SCM*)
HCN #1	1847 - 1903	12 December	.2735
	2030 - 2045	12 December	.2721
	2105 - 2115	12 December	.2232
NH_3 #1	1430 - 1440	12 December	.1751
NH_3 #2	1513 - 1530	12 December	.2678
NH_3 #3	1617 - 1634	12 December	.5672
NH_3 #4	1715 - 1740	12 December	.3899
SASS	1442 - 2009	12 December	29.686
GC Sample #1 TB	1300	12 December	
GC Sample #2 TB	1535	12 December	
GC Sample #3 TB	1551	12 December	
GC Sample #4 TB	1715	12 December	

[1] Calculated value, wet basis.

* At 25°C (77°F) and 101 kPa (1 atm), dry basis.

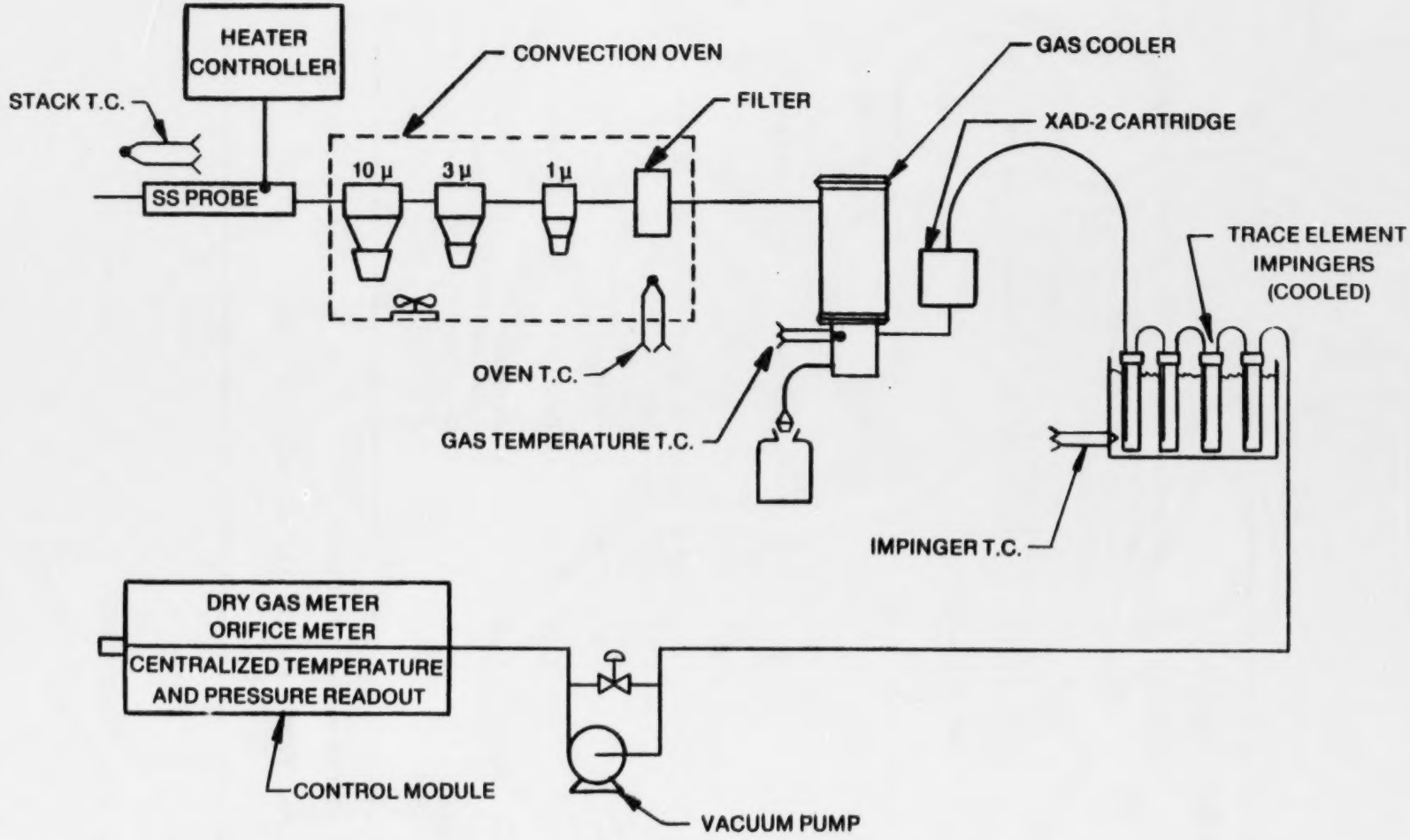

Figure B-2. Source Assessment Sampling System (SASS) Schematic

The impinger solutions used for vapor phase trace element collection were:

1.	6% H_2O	750 ml
2.	2M $(NH_4)_2S_2O_8$ + 0.2M $AgNO_3$	750 ml
3.	2M $(NH_4)_2S_2O_8$ + 0.2M $AgNO_3$	750 ml
4.	Preweighed silica gel	

Sample recovered from the front half of the train (nozzle, probe, cyclones, and filter) were weighed and used to calculate the particulate concentration of the gas stream. A portion of this particulate and the material recovered from the organic module were analyzed to characterize the organic material collected. Portions from all three sections of the train (front half, organic module, and trace element collection impingers) were recovered for trace element analysis.

The mass of aqueous condensate collected by the train during this run plus the total volume of flue gas sampled were used to calculate a moisture fraction of 13.5% for the flue gas.

B2.2 Ammonia

Samples for analysis of ammonia in the flue gas were collected during the SASS run. An auxiliary sampling train shown in Figure B-3 was used. It consisted of a stainless steel probe and a heated 47 mm glass fiber filter. The impinger contents were:

1.	10% H_2SO_4	100 ml
2.	10% H_2SO_4	100 ml
3.	Dry	
4.	Preweighed silica gel	

The gas temperature was held at 120°C (250°F) until the gas had been filtered. Four sequential ammonia sampling runs were made simultaneously with ammonia sampling runs performed at the product gas duct. At the completion of each run the impinger contents were transferred to sample bottles and replaced with fresh solutions for the next runs. The impinger solutions were analyzed on-site by the analytical method described in Appendix C. Data pertinent to these ammonia sampling runs are presented at the end of this section (Table B-1).

B2.3 Cyanide

Three samples for vapor phase cyanides were collected at the test burner simultaneously with cyanide sampling of the product gas. The auxiliary sampling assembly and sampling methodology used for ammonia collection was also used for cyanides. The impinger solutions used for cyanide collection were:

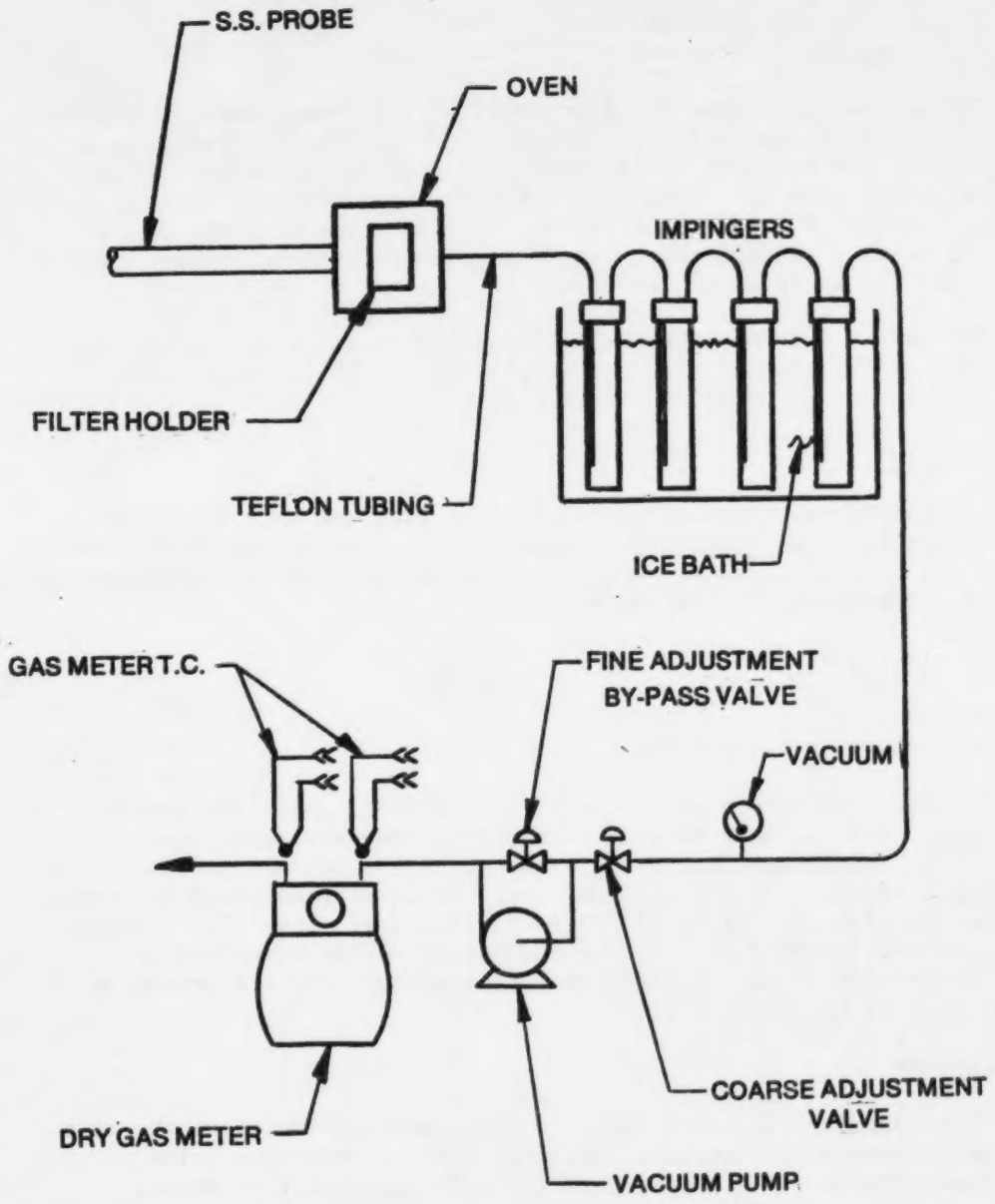

Figure B-3. Schematic Drawing of Impinger Sampling Train Used at the Test Burner

70-1595-1

1.	10% NaOH	100 ml
2.	10% NaOH	100 ml
3.	Dry	
4.	Preweighed silica gel	

The resulting impinger solutions from each of the three runs were treated to remove sulfides and then analyzed on-site, as described in Appendix C. Pertinent data for each of these runs is presented at the end of this section (Table B-1).

B2.4 Samples for Gas Chromatographic Analyses

The test burner flue gas was analyzed on-site by gas chromatography for major (fixed) gases, gaseous sulfur species, and C_1-C_6 hydrocarbons as described in Appendix C. The gas samples were collected with a sampling and conditioning apparatus consisting of 1.2 meters of heat traced Teflon sample line followed by a Teflon® membrane filter in a stainless steel filter holder. These were followed by a Perma-Pure Drier®, a Teflon®-lined diaphragm pump and a flow meter. Silanized glass sample bombs were used to collect the conditioned gas at the exit of the train. Sample bombs were purged, pressurized to >135 kPa (5 psig) and immediately transported to the mobile laboratory for analysis.

B3.0 PRODUCT GAS - 7, 7a

The product gas from the gasifier was sampled at two locations: the exit of the cyclone just prior to the venturi flow meter and in the duct to the start-up flare. The use of the second location was necessitated by plant operational problems. As a result of these problems, the product gas was directed to the start-up vent flare from a point upstream of the cyclone. The original sampling port was by-passed (see Figure B-1).

Samples of the product gas were collected for characterization of:

- ammonia concentration
- cyanide concentration
- vapor phase concentrations of:
  - C_1-C_6 hydrocarabons
  - volatile sulfur species
  - fixed gases
- organic content
- trace element content
- volatile organics

With the exception of ammonia and cyanide, all sampling was performed at the port in the start-up vent duct. For both locations an electrostatic precipitator (ESP) was used prior to the impingers in the sampling trains and the organic module. The ESP shown in Figure B-4 removed particulates and oil and tar aerosols from the product gas. These constituents would plug conventional filters.

The gas stream entered the lower portion of the ESP and was directed toward a catch cup at the bottom of the ESP, thus permitting the collection of any easily removed material (particulate and condensate) without fouling the upper portion of the ESP. As the gas stream moved upward through the ESP, electrostatic collection was induced by the 12 KVDC potential between the 0.025 mm center electrode and the cylindrical shell. Colloidal-sized aerosols were removed from the gas stream and forced to coalesce by their ultimate contact with the outer shell and other aerosol particles. Accumulated oils and tars flowed down the walls to the catch cup at the bottom of the ESP. The cleaned gas exited near the ESP top. Most collection occurred near the base of the ESP; the upper portions remained relatively free of material.

ESP's of this configuration have been shown to be 99+% efficient for dry material of colloidal size. However, the primary reason for the use of the ESP was its ability to remove particulates and oil and tar aerosols without frequent stops for servicing or changing filtering elements. A glass fiber filter was used at the exit of the ESP as a polish and a back-up in the event of an ESP failure. The ESP temperature was held

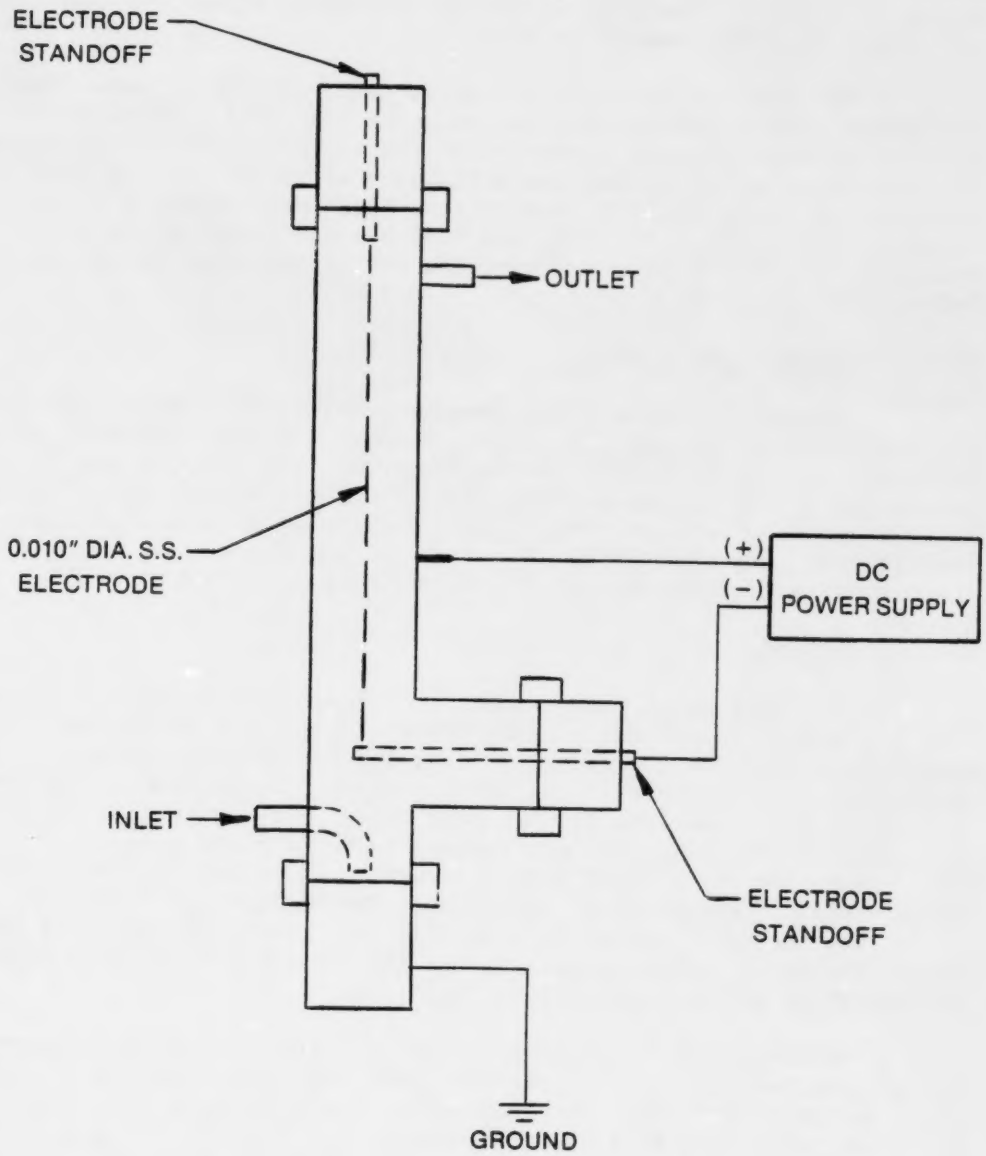

Figure B-4. Schematic of ESP Used for Aerosol and Particulate Removal

70-1596-1

at 140°C (285°F) and the filter at 150°C (300°F) to avoid further condensation of any oils remaining in the gas streams. Figure B-5 shows the ESP and filter in their respective ovens.

Material collected by the probe, ESP, and filter were common to all trains used at the product gas start-up vent (7a). These fractions remained separate through a portion of the analytical matrix to enable the calculation of an ESP collection efficiency of 99.2%. Of the 78.60 grams collected in the probe, ESP, and filter; 49.1% was collected in the probe, 50.5% was collected in the ESP, and 0.4% was collected by the filter. Methylene chloride soluble material was 68% of the total catch and the balance 32% was insoluble.

B3.1 Ammonia and Cyanide

Samples for ammonia and cyanide analyses were collected at the original product gas sampling port. These collections were made simultaneously with those made at the test burner. The sampling trains and procedures were the same as those described for the test burner except that the ESP was used prior to the filter. These samples were also analyzed on-site using the procedures described in Appendix C. Pertinent data for these samples are presented at the end of Section 3 (Table B-2).

B3.2 Organics

The SASS train shown in Figure B-6 was used to collect samples from the start-up vent for organic characterization. An ESP and filter were substituted for the three cyclones and filter normally used with the SASS train. The position of the XAD-2 canister, downstream of the condensate collector as used for the test burner, was retained. The gas flow rate through the SASS train was reduced to 0.017 cubic meters per minute (0.6 cubic feet per minute) from 0.11 cubic meters per minute (4 cubic feet per minute) for conventional SASS runs. The smaller gas flow rates permitted the use of a smaller ESP and also permitted sampling for a longer time. The total volume passed through the organic module was 5.08 nM^3 instead of 30 nM^3 for conventional SASS runs.

A lower oven temperture of 140°C, instead of 200°C for conventional SASS runs was used to prevent heavy tars from reaching a plastic state during filtration. Past experience has shown that even small quantities of heavy tars at temperatures above 150°C (300°F) tend to flow after isolation on the filter surface and cause a high pressure drop across the filter. The SASS train impingers with the 6% peroxide and silver persulfate solutions were used as pump and meter protection and as reserve analytical samples but were not analyzed.

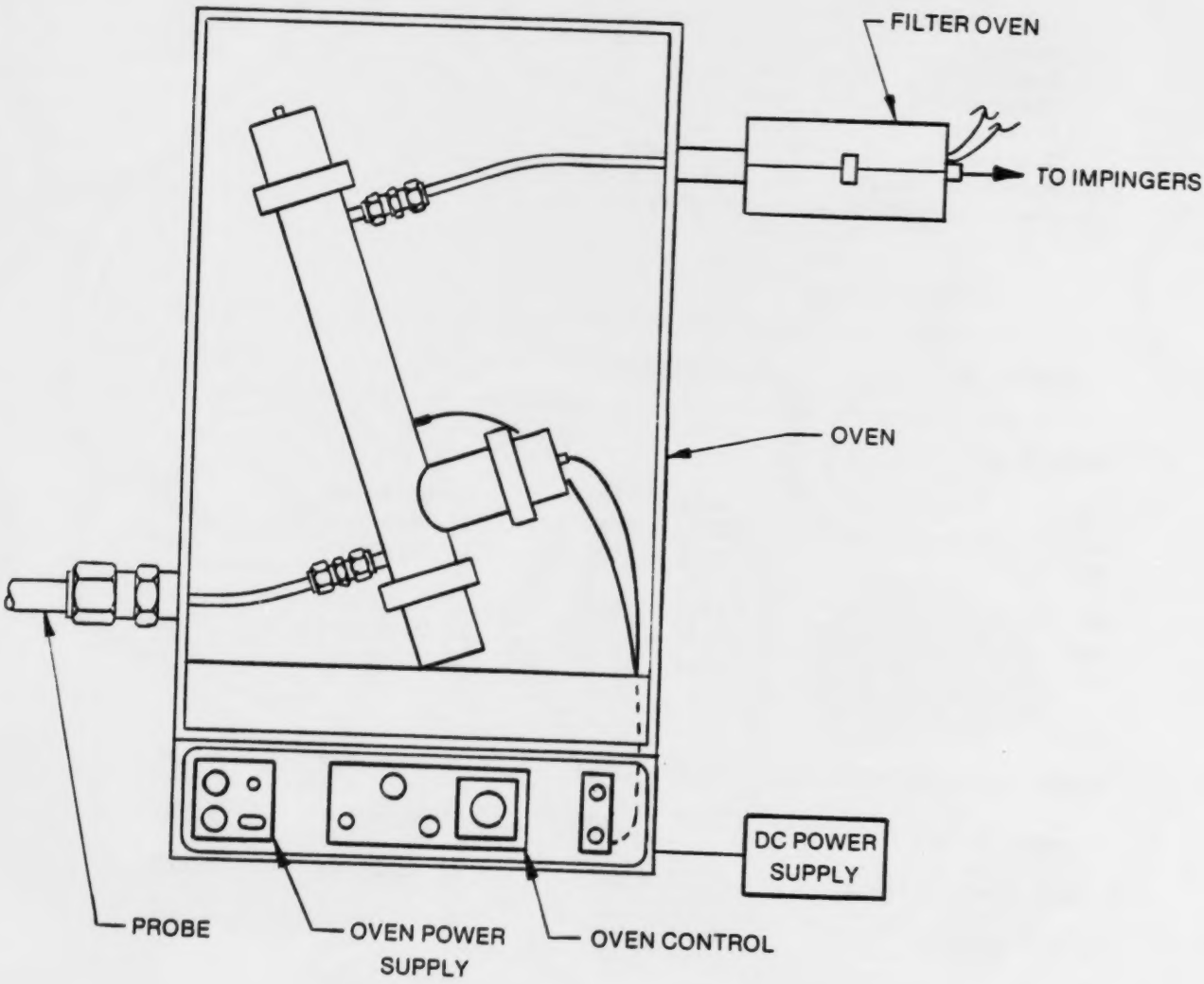

Figure B-5. ESP and Filter Assembly

70-1597-1

TABLE B-2

PRODUCT GAS (Main Duct)/(Vent)

Summary:

Flow Rate - 51.0m^3/min (@ 25°C, 101 kPa)[1] (1800 ncfm)
Velocity - 30.4 m/s (99.8 fps)
Duct ID - 3.05 cm (10 in.)
Temperature - 160°C (321°F)
Pressure - +3.8" H_2O
% Moisture - 25% by volume
Molecular Weight - 26.68 dry (24.51 actual)
Sampling Period - 1430 - 2124, 12 Dec 1978; 1722 - 0123, 13-14 Dec 1978

Sampling Data:

SAMPLE ID	TIME	DATE	VOLUME (SCM*)
(Main Duct)			
HCN #1	1845 - 1907	12 December	.1434
HCN #2	2030 - 2045	12 December	.1169
HCN #3	2105 - 2124	12 December	.1338
NH_3 #1	1430 - 1440	12 December	.02736
NH_3 #2	1513 - 1523	12 December	.02981
NH_3 #3	1714 - 1724	12 December	.03221
(Vent)			
Total (ESP & Filter)	1722 - 0123	13-14 December	8.523
Organic Module	1722 - 0123	13-14 December	5.555
Vapor Trace Elements	1725 - 2321	13 December	2.613
Sulfur Species	0034 - 0117	14 December	0.355
GC Sample #5 PG	2010	12 December	
GC Sample #6 PG	2013	12 December	
GC Sample #7 PGV	1715	13 December	
GC Sample #8 PGV	1735	13 December	
GC Sample #9 PGV	1910	13 December	
GC Sample #10 PGV	1930	13 December	
GC Sample #11 PGV	2200	13 December	
GC Sample #12 PGV	2320	13 December	

* At 25°C (77°F) and 101 kPa (1 atm), dry basis.

[1] Wet basis.

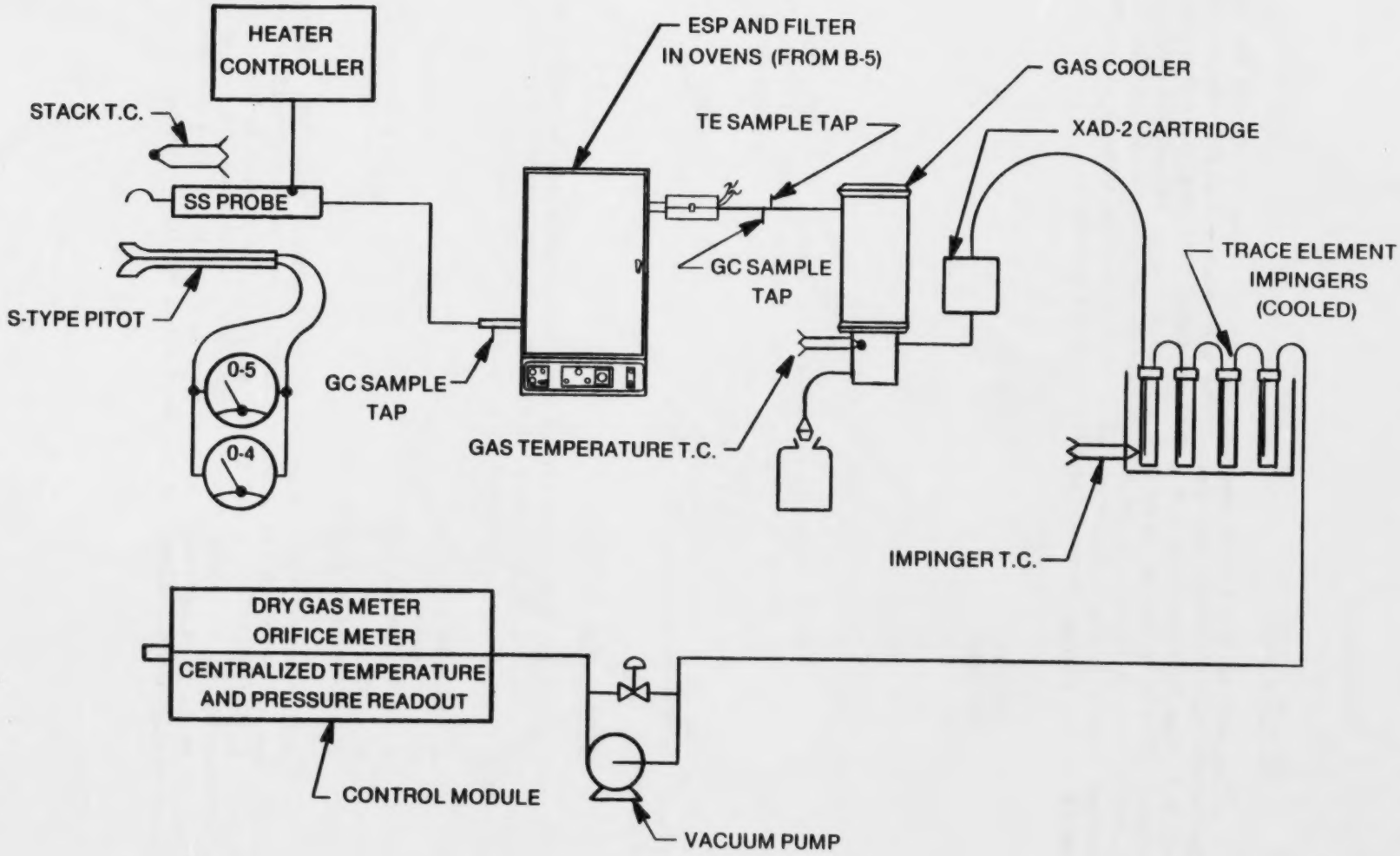

Figure B-6. Product Gas Sampling with ESP

B3.3 Trace Elements

Samples of the gas stream exiting the ESP shown in Figure B-6 were collected for trace element analysis. The gas exiting the ESP was carried directly to the impingers through a Teflon® tube. The organic module was bypassed. This arrangement permitted a simpler sample recovery scheme and also avoided the difficult process of obtaining an aliquot of the XAD-2, condensed organic mixture and condensate for trace element analysis. The contents of the impingers used for this collection were:

1.	Dry	
2.	10% HNO_3	250 ml
3.	10% HNO_3	250 ml
4.	Dry	
5.	10% KOH	250 ml
6.	10% KOH	250 ml
7.	Dry	
8.	Preweighed silica gel	

The first empty impinger served as a knock-out for condensate (aqueous and organic) which formed as the gas was cooled from 140°C. Other dry impingers were used to separate the acidic and basic portions of the impinger train. Due to the high organic content of the gas streams, acid/base solutions were selected for trace element collection because of their increased oxidizing capacity over silver persulfate solutions were selected.

B3.4 Total Sulfur Species

Samples for determination of the total sulfur concentration of the product gas stream were collected at the exit of the ESP filter system. The sulfur species were collected by a series of five impingers:

1.	6% H_2O_2	200 ml
2.	2N ZnOAc	200 ml
3.	0.1N KOH in EtOH	200 ml
4.	Dry	
5.	Preweighed silica gel	

Sulfur oxides were collected in the peroxide solution, hydrogen sulfide was collected in the acetate solution, and carbon disulfide and carbonyl sulfide were collected in the alcoholic potassium hydroxide solution. The total sulfur concentration determined from these samples was found to be in good agreement with the value calculated from the on-site gas chromatographic analysis of the individual sulfur species.

B3.5 Gas Samples for Gas Chromatography

Samples for GC analyses were collected with the gas sampling and conditioning train described in Section 2.4. This train was used at both the main product gas line and the start-up vent. Samples were obtained at a tap downstream of the ESP. The ESP removed most of the particulates and aerosols, thus permitting less frequent replacement of the filter in the gas sampling and conditioning train. To verify that the ESP had no effect on sample integrity, simultaneous samples were collected before and after the ESP. The gas compositions determined at these two sites agreed within experimental error. The locations of these two sample taps are shown in Figure B-6.

B3.6 Volatile Organics

Gas samples for organic characterization were collected with Tenax tubes. The 0.32 cm o.d. x 28 cm glass-lined stainless steel tubes were packed with 10 cm of 60/80 mesh Tenax-GC followed by 5 cm of Davison Grade 15 silica gel. The sorbents were centered in the tube. A leakless diaphragm pump was used to draw samples through the Tenax tubes which were followed by a flow meter to monitor gas flow rate. An initial leak check was performed by plugging the tube entrance and setting the pump for maximum flow. The leak rate was measured at the flow meter.

Samples were collected by removing the plug at the tube inlet and inserting the tube into a tee downstream of the ESP. The sample flow rate (typically 30-60 cm^3/min) was determined by the pressure drop through the tube. The leak rate was rechecked after sampling. Due to the small sample volumes, the collection temperature was determined at ambient conditions rather than the temperature of the gas in the sampling line.

B4.0 COAL BIN VENT - 8

The coal bin is located directly above the upper lock hopper valves. Gases from this bin are drawn through a hood and a 0.3 m duct by an in-line fan. A 2.5 cm hole in this duct upstream of the fan served as a sampling port. Samples were collected from the coal bin vent to characterize the following parameters:

- ammonia
- cyanide
- total volatile sulfur
- volatile sulfur species
- C_1-C_6 hydrocarbons
- fixed gases
- metal carbonyls

A stainless steel probe 0.64 cm o.d. followed by a 47 mm glass fiber filter in a stainless steel filter holder (Figure B-3) was used for all impinger sampling done at this location. The filter holder was connected to Smith-Greenburg impingers with Teflon® tubing. The gas stream was relatively clean and did not require the use of an ESP. The impinger solutions and sample handling procedures for the ammonia, cyanide, total sulfur, and gas samples for GC analysis have been described in previous sections. Sampling data for sampling at this site is given in Table B-3.

Metal Carbonyls

Gas from the coal bin vent duct was filtered then passed through a series of impingers designed to collect iron and nickel carbonyls. Vapor phase iron and nickel collected by the impingers were analyzed and reported as the respective metal carbonyl. The impinger solutions were:

1.	3% Ultrex HCl	100 ml
2.	3% Ultrex HCl	100 ml
3.	Dry	
4.	Preweighed silica gel	

The solutions were tranferred to polyethylene bottles for storage and subsequent off-site analysis.

TABLE B-3

COAL BIN VENT

Summary:

Flow rate	- 27.9 m^3/min (@ 25°C, 101 kPa)[1] (984 ncfm)
Velocity	- 6.62 mps (2.17 fps)
Duct ID	- 0.3 M (12")
Temperature	- Ambient 4°C (39°F)
Pressure	- Ambient
% Moisture	- 1% by volume
Sampling Period	- 1604 - 0247 13-14 December

Sampling Data:

RUN	TIME	DATE	VOLUME (SCM*)
HCN #1	1907 - 1930	13 December	.4298
HCN #2	1940 - 2010	13 December	.5430
HCN #3	2015 - 2048	13 December	.5740
NH_3 #1	1604 - 1707	13 December	.5672
NH_3 #2	1715 - 1800	13 December	.4749
NH_3 #3	1805 - 1900	13 December	.4664
Species #2	2245 - 2323	13 December	.6875
Species #3	2330 - 2400	13 December	.5675
$M(CO)_n$	0051 - 0247	14 December	1.6736

* At 25°C (77°F) and 101 kPa (1 atm), dry basis.
[1] Wet basis.

B5.0 SOLID AND LIQUID SAMPLES

The solid and liquid streams sampled during the lignite run (9-13 December 1979) were:

- Lignite - 1
- Gasifier Ash - 2
- Gasifier Ash Sluice Water - 3
- Cyclone Dust - 4
- Cyclone Dust Quench Water - 5
- Service Water - 6

B5.1 Lignite

Lignite feed to the gasifier was brought from storage by front-end loaders, screened to remove the fines (<20 mm) and then conveyed to the coal bin above the gasifier. Grab samples were collected as the sized lignite fell from the conveyor belt to the receiving hopper of the bucket elevator. During the test effort, a one liter grab sample was taken during each batch loading operation (usually twice per eight hour shift).

B5.2 Gasifier Ash

Gasifier ash was periodically (usually once per eight hour shift) transferred from the bottom of the gasifier into a bin. Service water was added to the bottom of the gasifier to aid in the removal of the ash. Once the ash was transferred to the bin, the water (gasifier ash sluice water) was decanted from the ash. A 2-3 liter sample of the dewatered ash was collected as it was dumped from the bin after the bin and ash had been weighed.

B5.3 Gasifier Ash Sluice Water

As the gasifier ash sluice water (see Section 5.2) was decanted from the ash, samples of the water were collected. The water was collected in glass and plastic containers, transported to the on-site laboratory and preserved for analysis.

B5.4 Cyclone Dust

A 1-2 liter cyclone dust sample was collected just after each gasifier ash sample was collected (once per eight hour shift). These samples were collected from a water quench trough at the bottom of the cyclone leg. The sample was raked from the trough, and the quench water was allowed to drain from the sample. The samples were then transferred to containers.

Water

During each cyclone dust sample collection, a 3-4 liter sample of quench water was also collected from the quench water trough. The samples were preserved, using the procedures described in Appendix C, immediately after collection.

B5.6 Service Water

Two one-liter service water samples were collected at a tap in the service water line. The analytical results from this sample were used to make background corrections for the ash sluice water and cyclone dust quench water results.

B6.0 SAMPLE LOG

Sample No.	Description	Date	Time	Analysis
FS-1	ESP Impinger and CH_2Cl_2	12-9		Hold
FS-2	ESP Filter	12-9		Hold
FS-3	ESP Tar	12-9		Hold
FS-4	Gasifier Cyclone Dust - Coke	12-11	1500	Hold
FS-5	Gasifier Ash Quench Water	12-11	2300	BOD
FS-6	Gasifier Ash Quench Water	12-11	2300	Hold
FS-7	Green Pellets	12-11	2400	Hold
FS-8	Finished Pellets	12-11	2400	Hold
FS-9	Lignite	12-12	0015	Ult, Prox, composite with FS-11, 21, 24, 50, 72 for SSMS*, α & β, Size, mineral
FS-10	Cyclone Quench Water	12-12	0030	Composited with FS-19, 27 for pH, TDS, COD, TOC, CN^-, NH_4^+, anions
FS-11	Lignite	12-12	1200	Ult, Prox, composite with FS-9, 21, 24, 50, 72 for SSMS*, α & β, Size, mineral
FS-12	Gasifier Ash Sluice water - glass	12-12	1430	Composited with FS-43, 51, 66 for Phenols
FS-13	Gasifier Ash Sluice water - plas	12-12	1430	Composite with FS-45, 52, 68 for SSMS*
FS-14	Gasifier Ash Sluice water - plas	12-12	1430	Composited with FS-46, 53, 67 for pH, TDS, COD, CN^-, NH_4^+, anions, TOC
FS-15	Gasifier Ash	12-12	1430	Composite with FS-47, 61, 70 for BIO, SSMS*, Ult, Prox, α & β, Morph, ORG, Leaching, mineral
FS-16	Service Water	12-12	1445	Trace elements by SSMS*

*Includes Hg, As, Se, Sb by A.A.

Sample No.	Description	Date	Time	Analysis
FS-17	Cyclone Quench water - glass	12-12	1500	Composited with FS-25 for Phenols
FS-18	Cyclone Quench water - plas	12-12	1500	Trace elements by SSMS
FS-19	Cyclone Quench water - plas	12-12	1500	Composited with FS-27, 10 for pH, TDS, TSS, COD, TOC, CN^-, NH_4^+, anions
FS-20	Cyclone Dust	12-12	1500	Composite with FS-28 for SSMS, ULT, PROX, α & β size, Morph, Org, Leaching, BIO
FS-21	Lignite	12-12	1510	Ult, Prox, composite with FS-9, 11, 24, 50, 72 for SSMS, α & β size, mineral
FS-22	Green Pellets	12-12	1800	Hold
FS-23	Finished Pellets	12-12	1800	Hold
FS-24	Lignite	12-12	1945	Ult, Prox, composite with FS-9, 11, 21, 50, 72 for SSMS, α & β, size, mineral
FS-25	Cyclone Quench Water - glass	12-12	2030	Composited with FS-17 for phenols
FS-26	Cyclone Quench water - plas	12-12	2030	Biological & BOD, TOC
FS-27	Cyclone Quench water - plas	12-12	2030	Composited with FS-19, 10, for pH, TDS, COD, TOC, CN^-, NH_4^+, anions
FS-28	Cyclone Dust	12-12	2030	Biological, composite with FS-20 for SSMS, Ult, Prox, α & β, size, Morph, Org and Leaching, BIO
FS-29	Green Pellets	12-12	2045	Hold
FS-30	Finished Pellets	12-12	2045	Hold
FS-31	Gasifier Ash	12-12	1430	Hold
FS-32	T.B. SASS Condensate Aqueous phase 2107.04 grams	12-12		Organic

*Includes Hg, As, Se, Sb by A.A.

Sample No.	Description	Date	Time	Analysis
FS-33	T.B. SASS XAD-Resin	12-12		SSMS*
FS-34	T.B. SASS Cyclone Particulates > 3 μ 0.03 grams	12-12		SSMS
FS-35	T.B. SASS Condensate	12-12		SSMS*
FS-36	T.B. SASS Org. Module Wash	12-12		Organic
FS-37	T.B. SASS Cyclone Rinse	12-12		Filter & Weigh
FS-38	T.B. SASS 1st impinger	12-12		Combine for SSMS*
FS-39	T.B. SASS 2nd impinger	12-12		
FS-40	T.B. SASS 3rd impinger	12-12		
FS-41	See FS-49			
FS-42	See FS-145			
FS-43	Gasifier Ash sluice water-glass	12-13	0030	Composited with FS-12, 51, 66 for phenols
FS-44	Gasifier ash sluice water	12-13	0030	Composite with FS-54 & 69 for organics and biological
FS-45	Gasifier ash sluice water	12-13	0030	Composite with FS-13, 52, 68 for SSMS*
FS-46	Gasifier ash sluice water	12-13	0030	Composited with FS-14, 53, 67 for pH, TDS, TSS, COD, TOC, CN^-, NH_4^+, anions
FS-47	Gasifier ash	12-13	0030	Composite with FS-15, 61, 70 for BIO, mineral SSMS*, ULT, Prox, α & β, Morph, ORD, leaching

*Includes Hg, As, Se, Sb by A.A.

Sample No.	Description	Date	Time	Analysis
FS-48	Gasifier Ash	12-13	0030	Hold
FS-49	T.B. SASS Probe Wash	12-12		Evaporate $MeCl_2$ and weigh
FS-50	Lignite	12-13	1730	Ult, Prox, combine with FS-9, 11, 21, 24, 72 for SSMS*, α & β, size
FS-51	Gasifier ash sluice water-glass	12-13	1900	Composited with FS-12, 43, 51, 66 for phenols
FS-52	Gasifier ash sluice water-plas	12-13	1900	Composite with FS-13, 45, 68 for SSMS*
FS-53	Gasifier ash sluice water - plas	12-13	1900	Composited with FS-14, 46, 67 for pH, TDS, TSS, COD, TOC, CN^-, NH_4^+, anions
FS-54	Gasifier ash sluice water	12-13	1900	Composite with FS-44 and 69 for Bioassay and organic
FS-55	Cyclone quench water - extra glass	12-13	1900	
FS-56	Cyclone quench water-extra	12-13	1900	BOD, TOC, organic
FS-57	Cyclone quench water-extra	12-13	1900	
FS-58	Cyclone quench water-extra	12-13	1900	
FS-59	Cyclone Dust	12-13	1900	Hold
FS-60	Service Water	12-13	1945	Hold
FS-61	Gasifier Ash	12-13	1900	Composite with FS-15, 47, 70 for SSMS*, mineral Ult, Prox, α & β, Morph, org, leaching, Bio
FS-62	Gasifier ash	12-13	1900	Hold
FS-63	Gasifier ash	12-13	1900	Hold
FS-64	Tar deposits before test burner	12-13		Hold
FS-65	Tar deposits in line to kiln	12-13		Hold

*Includes Hg, As, Se, Sb by A.A.

Sample No.	Description	Date	Time	Analysis
FS-66	Gasifier ash sluice water-glass	12-13	2330	Composited with FS-12, 43, 51 for phenols
FS-67	Gasifier ash sluice water-plas	12-13	2330	Composited with FS-14, 46, 53 for pH, TDS, TSS, COD, TOC, CN^-, NH_4^+, anions
FS-68	Gasifier ash sluice water-plas	12-13	2330	Composite with FS-13, 45, 52 for SSMS*
FS-69	Gasifier ash sluice water	12-13	2330	Composite with FS 44 and 54 for bio & org
FS-70	Gasifier ash	12-13	2330	Composite with FS-15, 47, 62, for SSMS*, mineral Ult, Prox, α & β, Morph., org, leaching, Bio
FS-71	Gasifier ash	12-13	2330	Hold
FS-72	Lignite	12-14	0030	Ult, prox, combine with FS-9, 11, 21, 24, 50 for SSMS*, α & β, size, mineral
FS-73	PG SASS condensate aqueous phase	12-13		Organic, BIO
FS-74	PG SASS org. module rinse	12-13		Organic, BIO
FS-75	PG SASS ESP Rinse	12-13		SSMS*, Organic, BIO
FS-76	Gasifier condensate before T.B. - 3 bottles	12-13		Hold
FS-77	P.G. trace metals 1st impinger - dry	12-13		Combine for SSMS*
FS-78	P.G. trace metals 2nd impinger- 10% HNO_3	12-13		
FS-79	P.G. trace metals 3rd impinger- 10% HNO_3	12-13		
FS-80	P.G. trace metals 4th impinger- NaOH	12-13		Combine for SSMS*
FS-81	P.G. trace metals 5th impinger- NaOH	12-13		

*Includes Hg, As, Se, Sb by A.A.

Sample No.	Description	Date	Time	Analysis
FS-82	Coal Bin metal carbonyl-1st impinger	12-13		Fe, Ni
FS-83	Coal bin metal carbonyl - 2nd impinger	12-13		Fe, Ni
FS-84	Coal bin metal carbonyl-blanks	12-13		Fe, Ni
FS-85	P.G. total Sulfur impingers 1-3	12-13		Sulfur as CS_2
FS-86	C.B. total sulfur impingers 2-2	12-13		Sulfur as CS_2
FS-87	C.B. total sulfur impingers 3-2	12-13		Sulfur as CS_2
FS-88	Blank - alcoholic KOH for total sulfur			Sulfur as CS_2
FS-89	PG-6% H_2O_2 for total sulfur	12-13		Sulfur as SO_x sulfate
FS-90	CB-6% H_2O_2 for total sulfur impinger 2-3	12-13		Sulfur as SO_x sulfate
FS-91	PG-6% H_2O_2 for total sulfur impinger 1-1	12-13		Sulfur as SO_x sulfate
FS-92	CB-6% H_2O_2 for total sulfur impinger 3-3	12-13		Sulfur as SO_x sulfate
FS-93	Blank-6% H_2O_2 for total sulfur	12-13		Sulfur as SO_x sulfate
FS-94	CB zinc acetate for total sulfur imp. 3-1	12-13		Sulfur as H_2S - Zn S
FS-95	CB zinc acetate for total sulfur imp. 1-1	12-13		Sulfur as H_2S - Zn S
FS-96	CB zinc acetate for total sulfur imp 2-1	12-13		Sulfur as H_2S - Zn S

Sample No.	Description	Date	Time	Analysis
FS-97	PG zinc acetate for total sulfur imp 1-2	12-13		Sulfur as H_2S - Zn S
FS-98	Train Rinse	12-13		Sulfur as - H_2S - Zn S
FS-99	Blank Rinse	12-13		
FS-100	TB - 5% H_2SO_4 for NH_3-Imp 1-1	12-12		NH_3 as NH_3 NH_4^+
FS-101	TB - 5% H_2SO_4 for NH_3-Imp 1-2	12-12		NH_3 as NH_3 NH_4^+
FS-102	TB - 5% H_2SO_4 for NH_3-Imp 2-1	12-12		NH_3 as NH_3 NH_4^+
FS-103	TB - 5% H_2SO_4 for NH_3-Imp 2-2	12-12		NH_3 as NH_3 NH_4^+
FS-104	TB - 5% H_2SO_4 for NH_3-Imp 3-1	12-12		NH_3 as NH_3 NH_4^+
FS-105	TB - 5% H_2SO_4 for NH_3-Imp 3-2	12-12		NH_3 as NH_3 NH_4^+
FS-106	PG - 5% H_2SO_4 for NH_3-Imp 1-1	12-13		NH_3 as NH_3 NH_4^+
FS-107	PG - 5% H_2SO_4 for NH_3-Imp 1-2	12-13		NH_3 as NH_3 NH_4^+
FS-108	PG - 5% H_2SO_4 for NH_3-Imp 2-1	12-13		NH_3 as NH_3 NH_4^+
FS-109	PG - 5% H_2SO_4 for NH_3-Imp 2-2	12-13		NH_3 as NH_3 NH_4^+
FS-110	PG - 5% H_2SO_4 for NH_3-Imp 3-1	12-13		NH_3 as NH_3 NH_4^+
FS-111	PG - 5% H_2SO_4 for NH_3-Imp 3-2	12-13		NH_3 as NH_3 NH_4^+
FS-112	TB - 5% H_2SO_4 for NH_3-Imp 4-1	12-13		NH_3 as NH_3 NH_4^+
FS-113	TB - 5% H_2SO_4 for NH_3-Imp 4-2	12-13		NH_3 as NH_3 NH_4^+
FS-114	TB - 5% H_2SO_4 for NH_3-Imp			
FS-115	CB - 5% H_2SO_4 for NH_3-Imp 1-1	12-13		NH_3 as NH_3 NH_4^+
FS-116	CB - 5% H_2SO_4 for NH_3-Imp 1-2	12-13		NH_3 as NH_3 NH_4^+
FS-117	CB - 5% H_2SO_4 for NH_3-Imp 2-1	12-13		NH_3 as NH_3 NH_4^+
FS-118	CB - 5% H_2SO_4 for NH_3-Imp 2-2	12-13		NH_3 as NH_3 NH_4^+
FS-119	CB - 5% H_2SO_4 for NH_3-Imp 3-1	12-13		NH_3 as NH_3 NH_4^+
FS-120	CB - 5% H_2SO_4 for NH_3-Imp 3-2	12-13		NH_3 as NH_3 NH_4^+

Sample No.	Description	Date	Time	Analysis
FS-121	CB - 10% NaOH for CN Imp 1-1	12-13		CN^- as HCN
FS-122	CB - 10% NaOH for CN Imp 1-2	12-13		CN^- as HCN
FS-123	CB - 10% NaOH for CN Imp 2-1	12-13		CN^- as HCN
FS-124	CB - 10% NaOH for CN Imp 2-2	12-13		CN^- as HCN
FS-125	CB - 10% NaOH for CN Imp 3-1	12-13		CN^- as HCN
FS-126	CB - 10% NaOH for CN Imp 3-2	12-13		CN^- as HCN
FS-127	PG - 10% NaOH for CN Imp 1-1	12-13		CN^- as HCN
FS-128	PG - 10% NaOH for CN Imp 1-2	12-13		CN^- as HCN
FS-129	PG - 10% NaOH for CN Imp 1-2	12-13		CN^- as HCN
FS-130	PG - 10% NaOH for CN Imp 2-2	12-13		CN^- as HCN
FS-131	PG - 10% NaOH for CN Imp 3-1	12-13		CN^- as HCN
FS-132	PG - 10% NaOH for CN Imp 3-2	12-13		CN^- as HCN
FS-133	PG - CN Imp Rinse	12-13		CN^- as HCN
FS-134	TB - 10% NaOH for CN Imp 1-1	12-12		CN^- as HCN
FS-135	TB - 10% NaOH for CN Imp 1-2	12-12		CN^- as HCN
FS-136	TB - 10% NaOH for CN Imp 2-1	12-12		CN^- as HCN
FS-137	TB - 10% NaOH for CN Imp 2-2	12-12		CN^- as HCN
FS-138	TB - 10% NaOH for CN Imp 3-1	12-12		CN^- as HCN
FS-139	TB - 10% NaOH for CN Imp 3-2	12-12		CN^- as HCN
FS-140	Trailer DI water	12-13		Hold
FS-141	PS SASS 6% H_2O_2	12-13		Hold

Sample No.	Description	Date	Time	Analysis
FS-142	PG SASS AgS_2O_8 #1	12-13		Hold
FS-143	PG SASS AgS_2O_8 #2	12-13		Hold
FS-144	PG SASS ESP Tar	12-13		SSMS*, Org, BIO
FS-145	TB SASS Filter	12-12		Organic
FS-146	TB SASS Wash Bottle	12-12		Hold, Blank
FS-147	PG Tenax tube-100 ml @ 25 ml/M	12-14	0215	Organic
FS-148	CB Tenax Tube-5 min @ 60 ml/M	12-14	1525	Hold
FS-149	CB Tenax Tube-2 min @ 50 ml/M	12-14	1450	Hold
FS-150	CB Tenax Tube-7 min @ 50 ml/M	12-14	1515	Hold
FS-151	CB Tenax tube-5 min @ 50 ml/M	12-14	1500	Hold
FS-152	CB Tenax tube-10 min @ 60 ml/M	12-14	1530	Organic
FS-153	TB Bomb #1	12-12	0130	Analysed by GC, majors S, C_1-C_6
FS-154	TB Bomb #2	12-12	1535	Analyzed by GC, majors,S, C_1-C_6
FS-155	TB Bomb #3	12-12	1551	Analyzed by GC, majors, S, C_1-C_6
FS-156	TB Bomb #4	12-12	1751	Analyzed by GC, majors, S, C_1-C_6
FS-157	PG Bomb #5	12-12	2010	Analyzed by GC, majors, S, C_1-C_6
FS-158	PG Bomb #6	12-12	2013	Analyzed by GC, majors, S, C_1-C_6
FS-159	PG Bomb #7 after ESP	12-13	1715	Analyzed by GC, majors, S, C_1-C_6
FS-160	PG Bomb #8 before ESP	12-13	1730	Analyzed by GC, majors, S, C_1-C_6
FS-161	PG Bomb #9 before ESP	12-13	1910	Analyzed by GC, majors, S, C_1-C_6
FS-162	PG Bomb #10 after ESP	12-13	1913	Analyzed by GC, majors, S, C_1-C_6

*Includes Hg, As, Se, Sb by A.A.

Sample No.	Description	Date	Time	Analysis
FS-163	PG Bomb #11 after ESP	12-13	2200	Analyzed by GC, majors, S, C_1-C_6
FS-164	PG Bomb #12 before ESP	12-13	2320	Analyzed by GC, majors, S, C_1-C_6
FS-165	CB Bomb #13	12-14	1415	Analyzed by GC, majors, S, C_1-C_6
FS-166	CB Bomb #14	12-14	1456	Analyzed by GC, majors, S, C_1-C_6
FS-167	AgS_2O_8 Blank			TM - SSMS
FS-168	PG Probe Rinse (lumpy)			Organic, SSMS*, BIO
FS-169	PG XAD resin	12-13		Organic, BIO
FS-170	PG SASS Filter #122 (.3065g)	12-13		SSMS*, Organic, BIO
FS-171	PG SASS Filter #123 (.2389g)	12-13		

*Includes Hg, As, Se, Sb by A.A.

REFERENCES

B-1 Lentzen, D.E., D.E. Waggoner, E.D. Estes, and W.F. Gutknecht. IERL-RTP Procedures Manual: Level 1 Environmental Assessment (Second Edition). NTIS No. PB-293 795. Research Triangle Institute, Research Triangle Park, North Carolina, 1978.

APPENDIX C
ANALYSIS METHODS

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C1.0 ANION/CATION METHODS

C1.1 Ammonia

Ammonia in the sulfuric acid impinger solutions and water samples was determined on-site by the distillation/titrimetric procedure (Ref. C-1). The sample was initially distilled into an indicating boric acid absorbing solution. The collected distillate was then titrated with standard sulfuric acid. Detection limit for the procedure is 1.4 µg/ml ammonia. This is equivalent to 1.7 ppm ammonia by volume collected from 0.28 SCM of sample gas in 200 ml impinger solutions.

C1.2 Cyanide

Interfering sulfide was precipitated from the caustic impinger solution and water samples with lead nitrate. An acid reflux distillation procedure was then used to remove interferences, and the cyanide concentration determined using the standard colorimetric method (Ref. C-1). Distilled cyanide collected in a caustic solution, was converted to cyanogen chloride by reaction with chloramine-T. Following complete conversion, a pyridine-barbituric acid reagent was added to produce a red-blue dye with absorbance at 578 nm. Cyanide in the range of 1-10 g was determined spectrophotometrically by comparison with a standard calibration curve generated with potassium cyanide standard solutions. Detection limit for the procedure is .02 µg/ml cyanide. This is equivalent to 0.15 ppm hydrogen cyanide by volume collected from 0.28 SCM sampled gas in 200 ml impinger solution.

C1.3 Chloride

A Dionex Model 14 ion chromatograph with a conductivity detector was used to measure chloride concentration in aqueous samples. An injection volume of 100 µl of sample was used and eluted with 0.003M Na_2CO_3/0.003M $NaHCO_3$. A detection limit of 0.1 ppm was reported. Sample response was compared to a standard curve.

C1.4 Fluoride

Baker (Ref. C-2), Bauman (Ref. C-3), and Thomas (Ref. C-4), describe standard addition techniques utilizing a specific ion electrode for the measurement of fluoride in aqueous samples. A citrate buffer was added to the sample to buffer both pH and ionic strength. Fluoride bound in metal complexes is released by the buffer. Fluoride concentration was related to potential changes which were measured using an Orion Model 94-09A solid state fluoride electrode and an Orion Model 701A Ion analyzer meter. A detection limit of 0.05 ppm was reported.

C1.5 Phosphate

Phosphate was determined by the standard method (Ref. C-1) as the molybdenum blue complex. The aqueous sample was reacted with acidic ammonium molybdate to form a yellow phosphomolybdate complex. The addition of ascorbic acid develops the blue color which is measured with a spectrophotometer. A detection limit of 0.5 ppm was reported.

C1.6 Nitrate

Nitrate was determined as in the standard method (Ref. C-1) by a colorimetric method in which nitrate reacts with chromotropic acid to form a yellow reaction product which was measured spectrophotometrically at 410 nm and compared to a set of standards. A detection limit of 0.1 ppm was reported.

C1.7 Nitrite

Nitrite in solution was determined by a colorimetric procedure (Ref. C-1) in which a reddish-purple dye was produced by the coupling of diazotized sulfanilic acid with naphthylamine hydrochloride. The dye was measured colorimetrically at 543 nm and compared to a standard calibration curve. A detection limit of 0.01 ppm was reported.

C1.8 Sulfate

In aqueous samples, sulfate was determined by the addition of barium chloride (Ref. C-1). The resulting turbid solution was analyzed spectrophotometrically at 450 nm. Standard curves were prepared for sample quantitation. A detection limit of 5 ppm was reported.

Sulfur dioxide and sulfur trioxide in gaseous streams were analyzed as the sulfate. Both gas species were adsorbed and oxidized to sulfate in hydrogen peroxide impinger solutions. The solutions were then boiled to remove the excess H_2O_2 and the sulfate oxidation product was analyzed. Carbon disulfide and carbonyl sulfide were trapped from gaseous streams in alcoholic KOH and also converted to sulfate by the addition of hydrogen peroxide and subsequent heating. The sulfate was analyzed on a Dionex Model 14 ion chromatograph and the sulfate peak compared to standard curves for quantitation. A 100 µl injection of sample was eluted using 0.003M Na_2CO_3/0.003M $NaHCO_3$. A detection limit of 0.1 ppm was reported.

C1.9 Sulfite - Sulfide

Total sulfite and sulfide in aqueous samples were analyzed by titrating a 25 ml aliquot with a standardized potassium iodide-iodine solution with starch as an end-point indicator (Ref. C-1). Sulfide in the impinger solutions was precipitated as zinc sulfide with zinc acetate under alkaline conditions. The zinc sulfide was transferred to a flask and an excess of a standard iodine solution was added. The excess iodine was then back-titrated with sodium thiosulfate to a starch end-point to determine the amount of iodine consumed by the sulfide (Ref. C-1).

C1.10 pH

The pH of each sample was measured using an Orion 701 pH meter.

C1.11 Total Dissolved Solids

Total dissolved solids were measured by the standard method (Ref. C-1). A 100 ml aliquot of the aqueous sample was filtered through an 0.8 μ filter. The filtrate was poured into a pre-weighed beaker and taken to dryness. The salts and beaker were weighed and solids content calculated.

C2.0 ELEMENTAL ANALYSES

C2.1 Spark Source Mass Spectrometry

Trace metals in the gas streams were analyzed by spark source mass spectrometry (SSMS). Samples were collected in two different sampling trains; by the SASS silver persulfate method (Ref. C-5), and by the acid/base collection method. The impinger volumes were determined and aliquots that represented a constant volume of gas were removed from each impinger in the collection train. These aliquots of absorbing solution were composited for SSMS analysis to form a sample representative of each collection train. Aliquots of the liquid samples were sent directly for SSMS with no additional sample preparation. Solid samples were also sent directly for SSMS. XAD-2 resin samples were combusted in an oxygen combustion bomb. The resulting gas was absorbed in dilute nitric acid and analyzed like liquid samples by SSMS.

C2.2 Antimony, Arsenic, Selenium and Mercury

The volatile elements were analyzed directly from the composite impinger samples and aqueous samples by atomic absorption (AA) spectrophotometry. Solids, however, were first weighed into a Vycor cup and placed in a Parr combustion bomb. The bomb was sealed, pressurized with oxygen and the sample ignited. The resultant combustion products were absorbed in a 20% Ultrex nitric acid solution for analysis by atomic absorption.

Arsenic, antimony, and selenium were analyzed by the use of the hydride generation attachment of the atomic absorption spectrometer (Ref. C-5). An aliquot of sample was introduced into the system, acidified, and sodium borohydride was added to reduce the species to the hydride. The generated gas was purged into a hydrogen-argon flame for analysis.

The absorbances and detection limits are shown in the table below.

Element	Wavelength	Detection Limit*
As	193.7 nm	3 ppb
Sb	217.0 nm	5 ppb
Se	196.0 nm	4 ppb

* ng/ml of solution

Mercury was determined by the procedure of Hatch and Ott (Ref. C-6). Samples were acidified and the mercury oxidized with potassium permanganate. Hydroxylamine hydrochloride and stannous chloride were used to reduce the mercury to the metallic state. Then, air was bubbled through the solution. The mercury-entrained air was passed through the absorption cell of an AA and quantified at 263.7 nm. A detection limit of 0.2 ppb was reported.

C2.3 Metal Carbonyls

Nickel and iron carbonyl trapped from gaseous streams in HCl impinger solutions were analyzed by direct injection into the flameless atomizer attachment of the AA. Instrumental parameters were:

Element	Wavelength	Dry	Char	Atomizer	Detection Limit*
Fe	248.3 nm	100°C	1100°C	2500°C	1 ppb
Ni	232.0 nm	100°C	1100°C	2700°C	5 ppb

*ng/ml of solution

C2.4 Inductively Coupled Argon Plasma Emission Spectrometry (ICP)

Samples of cyclone quench water, gasifier ash sluice water, and perchloric acid digestions of gasifier ash, cyclone dust, and product gas solids were analyzed for twenty-two elements by ICP. The liquid sample was aspirated into an argon plasma. The high temperature of the plasma ($\sim$10,000°C) induces electronic excitation of the atoms. The emitted light is passed through a slit and diffracted by a grating. Photomultiplier tubes are set at the characteristic wavelengths of the elements measured.

C2.5 Proximate/Ultimate Analysis

Proximate/Ultimate analyses were done on solids by ASTM methods D-3172-73 and D-3176-74.

C2.6 Mineral Analysis

Mineral analyses were performed on solid samples by solid dissolution and analysis by atomic absorption.

C2.7 Gross Alpha and Beta Radiation

The amount of alpha and beta radiation emitted from the solid samples was measured by counting alpha and beta particles using a Geiger-Mueller tube. Differential absorbing plates were used to separate alpha particles from beta.

C2.8 Specific Isotope Analyses

Samples of coal, gasifier ash, and cyclone dust were analyzed for Radian by ORP/EERF. Each isotope emits a characteristic radiation, therefore various counting techniques were employed. The following table lists the isotopes and the measurement technique.

TABLE C-1. ISOTOPE MEASUREMENT TECHNIQUE

Isotope	Detector
U-234	alpha spectrometry (surface barrier detector)
U-235	alpha spectrometry (surface barrier detector)
U-238	alpha spectrometry (surface barrier detector)
Th-227	alpha spectrometry (surface barrier detector)
Th-230	alpha spectrometry (surface barrier detector)
Th-232	alpha spectrometry (surface barrier detector)
Po-210	alpha spectrometry (surface barrier detector)
Pb-210	alpha-beta detector (IPC)
Ra-226	Lucas chamber
K-40	Ge-Li gamma spectrometer
Pb-214	Ge-Li gamma spectrometer
Bi-214	Ge-Li gamma spectrometer
Th-232 (ash)	Ge-Li gamma spectrometer

C3.0 GAS CHROMATOGRAPHY

Grab samples of the product gas, product gas vent, test burner flue gas, and coal bin vent gas were taken for the gas chromatographic analysis of:

- major components: H_2, O_2 + Ar, N_2, CO_2, CO, and CH_4,
- volatile sulfur species: H_2S, COS, SO_2, CH_3SH, C_2H_5SH, $(CH_3)_2S$, and CS_2,
- light hydrocarbons: C_1 to C_6, boiling range -160°C to 80°C

Samples were taken at the product gas vent before and after an electrostatic precipitator (ESP) sampling device and evaluated for any compositional changes due to the ESP. The samples were taken in silanized glass sample bombs and analyzed immediately.

C3.1 Volatile Sulfur Species

The instrument operating parameters for the analysis of the volatile sulfur species were:

Instrument:	Tracor Model 560 FPD-GC
Column:	3.05 m x 3.1 mm Teflon®, 1% TCEP [1,2,3-tris(cyanoethoxy) propane] and 0.5% H_3PO_4 on Carbopack B, 60/80 mesh
Carrier:	Nitrogen at 20 ml/min
Detector Temperature:	150°C
Oven Program:	30°C for 7 min; 10°C/min to 120°C; 120°C for 10 min

Standard samples were generated on site using Metronics permeation tubes with certified permeation rates and zero grade nitrogen at known flows. The calibration curves for H_2S at both high, 190 to 1650 vppm, and low, 5 to 25 vppm, concentration ranges are given in Figures C-1 and C-2. The calibration curves for COS, at 20 to 150 vppm, SO_2 at 50 to 450 vppm, and CS_2 at 1 to 10 vppm are given in Figures C-3 to C-5. The 95 percent confidence interval (2σ) and the number of determinations for each calibration point are given on the figures.

C3.2 Fixed Gases

The fixed gas analyses were carried out under the following conditions:

Instrument:	Fisher Gas Partitioner Model 1200 TCD-GC
Column 1:	2 m x 3.1 mm, Porapak PQ
Column 2:	3.4 m x 4.8 mm, Molecular Sieve 13X
Carrier:	8.5% Hydrogen in Helium at 30 ml/min
Oven Temperature:	50°C
Bridge Current:	275 mA

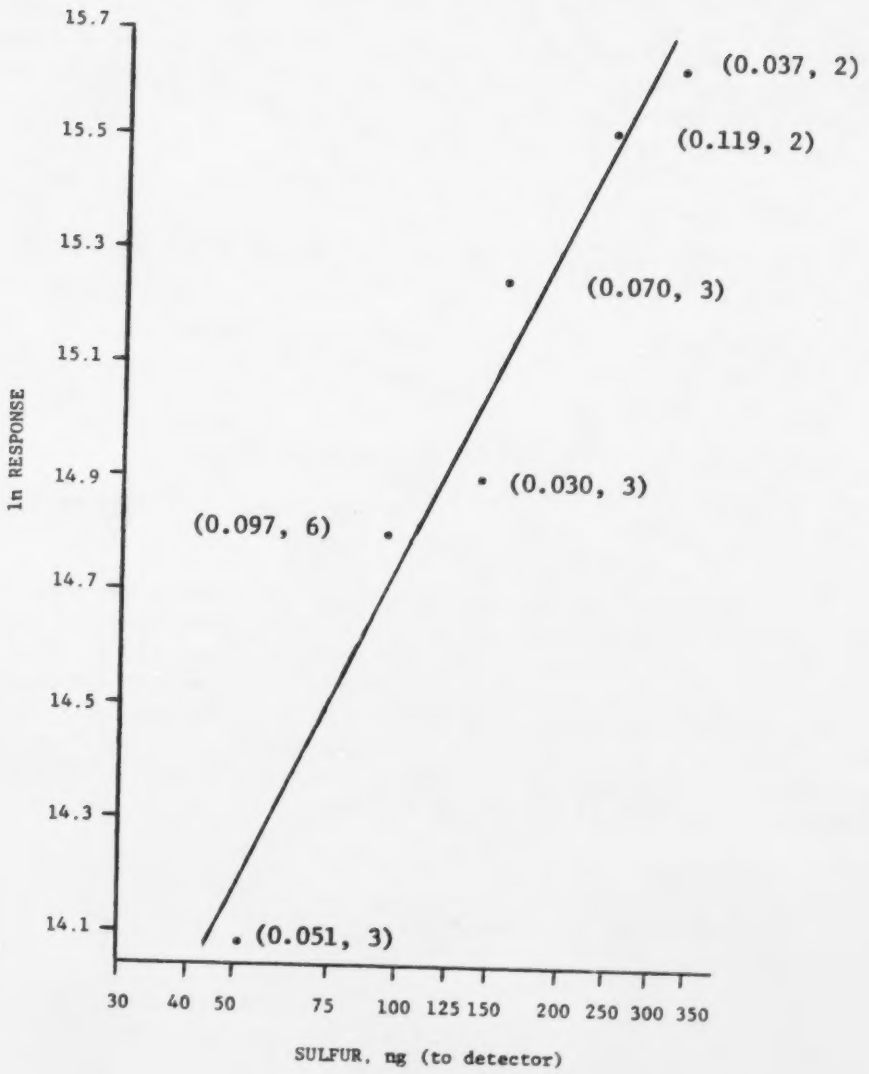

Figure C-1. H_2S Calibration Curve, High Concentration Range

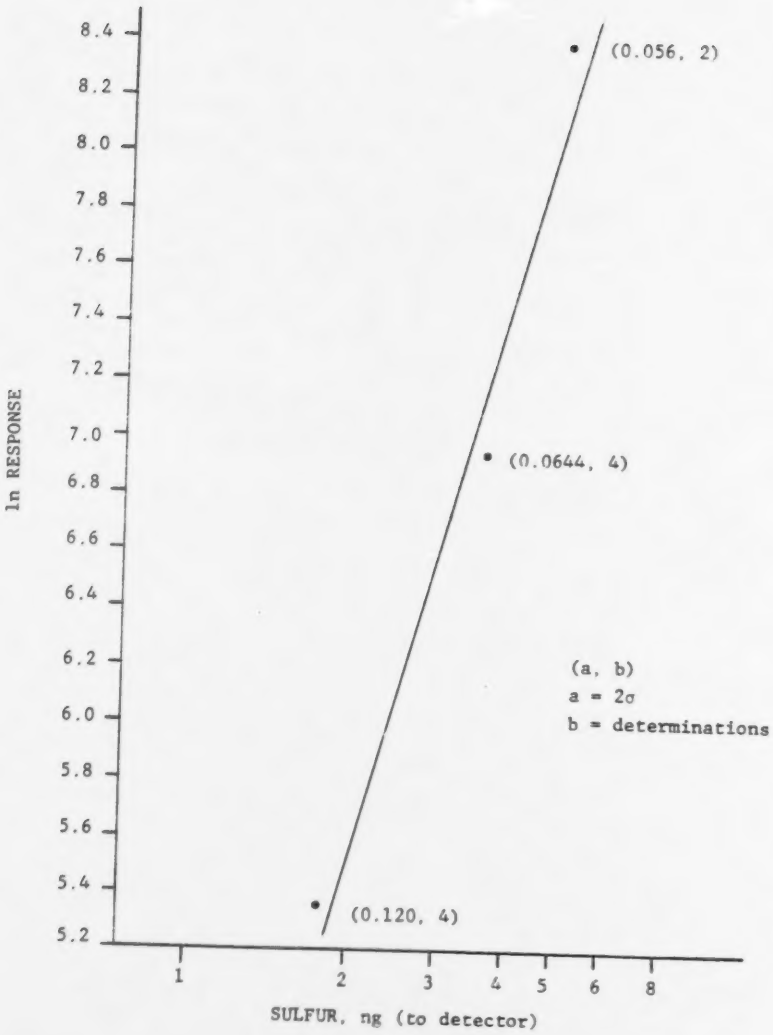

Figure C-2. H_2S Calibration Curve, Low Concentration Range

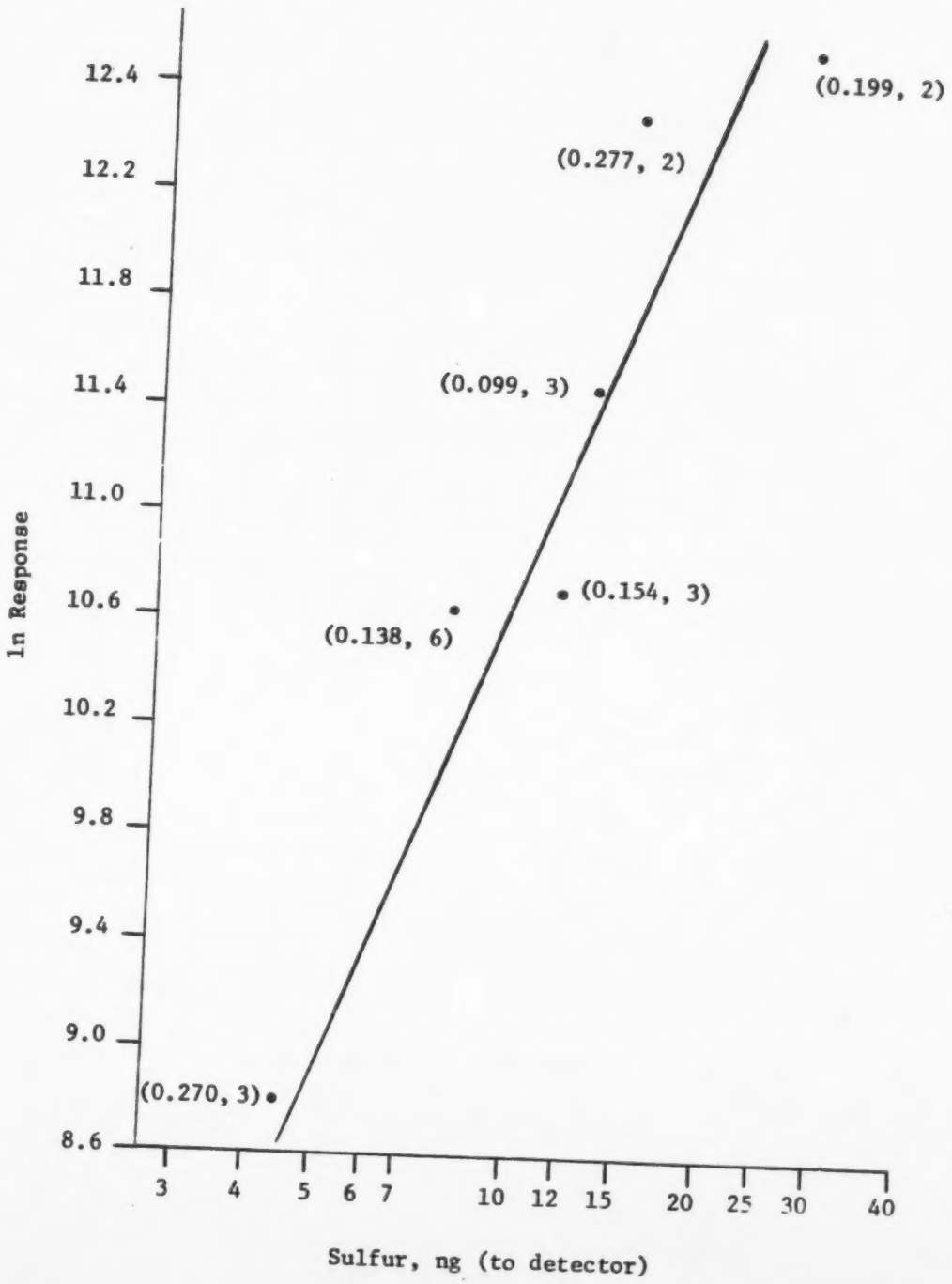

Figure C-3. COS Calibration Curve

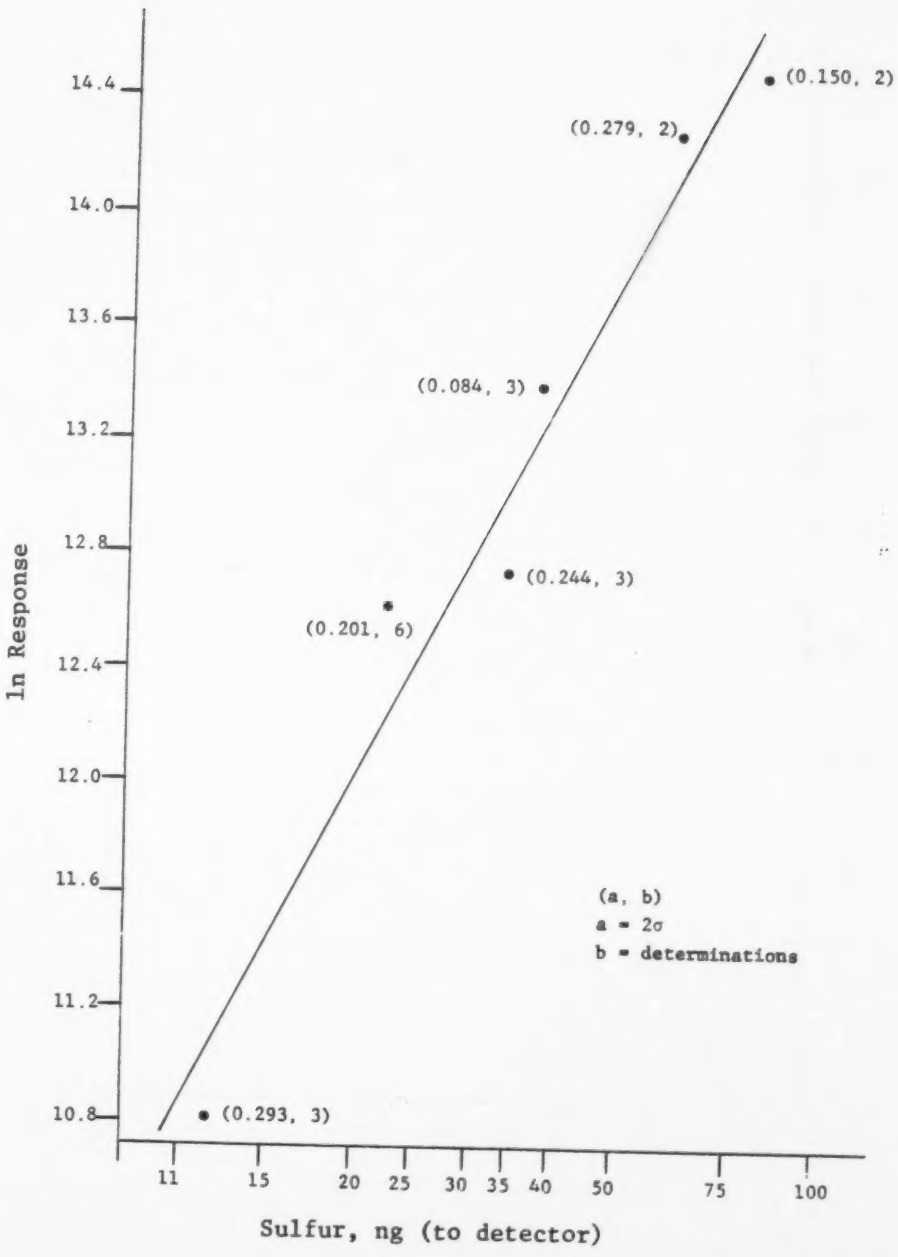

Figure C-4. SO_2 Calibration Curve

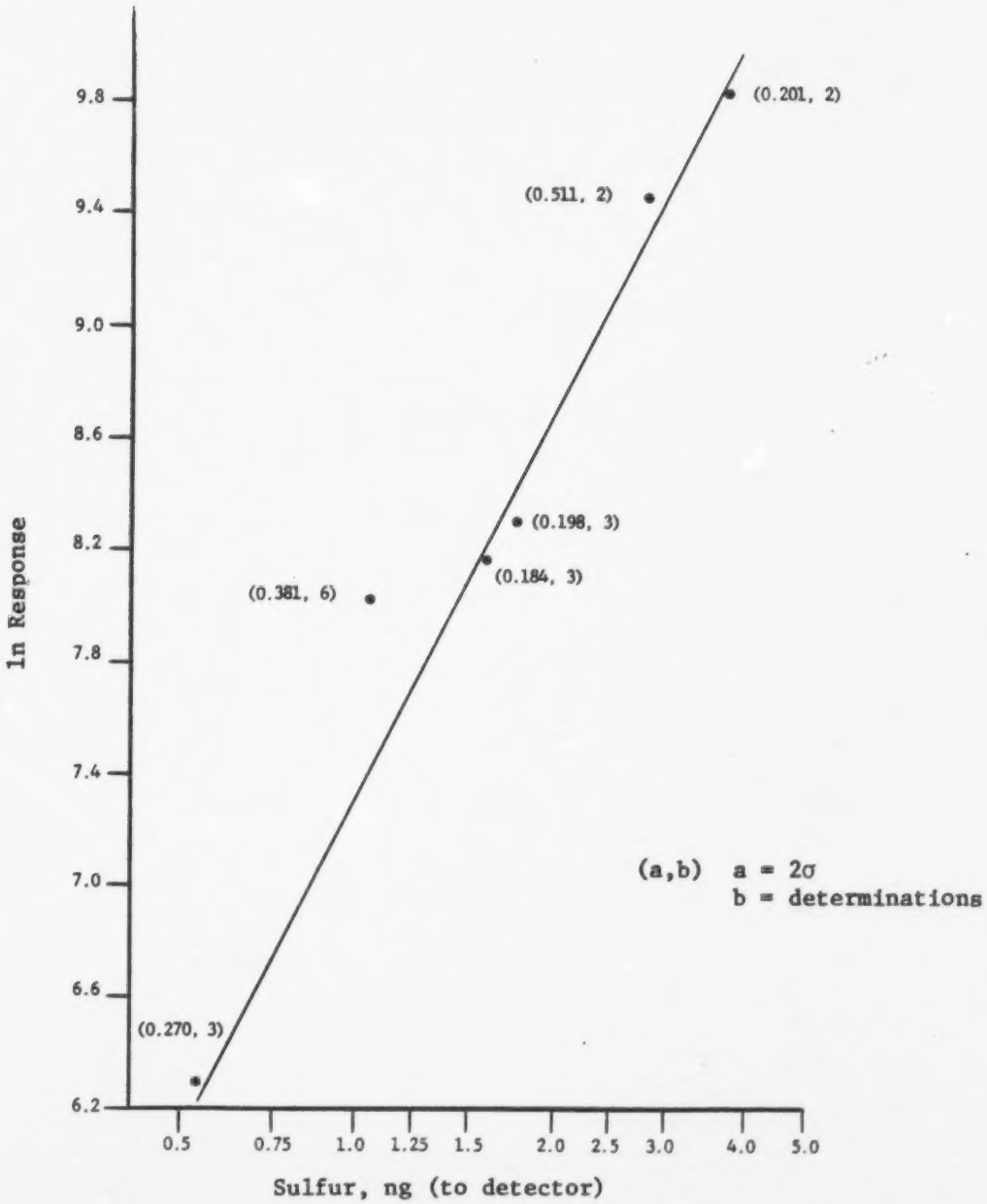

Figure C-5. CS_2 Calibration Curve

The instrument calibration for the fixed gases was performed on-site using standard gas mixtures supplied by Scientific Gas Products containing the species of interest. The certified mixtures used for on-site calibration have the following compositions:

Species	Standard 1	Standard 2
CO_2	19.6%	9.85%
H_2	13.1%	48.6%
O_2	2.16%	0
N_2	34.9%	12.9%
CO	25.6%	13.8%
CH_4	4.6%	14.8%

Figures C-6 to C-9 show the calibrations that were used. The 95 percent confidence limit (2σ) is given on each figure as is the number of individual determinations included in each calibration point.

C3.3 Light Hydrocarbons

C_1-C_6 hydrocarbons were analyzed on site using the following operating parameters:

Instrument:	Hewlett-Packard Model 5737A FID-GC
Column:	3.05 m x 2 mm i.d. stainless steel, Porapak Q
Carrier:	Nitrogen at 30 ml/min
Detector Temperature:	200°C
Oven Program:	50°C for 8 min; 16°C/min to 200°C; 200°C for 16 min

The calibration curves for this analysis are given in Figures C-10 to C-12. The number of determinations at each point and the 95 percent (2σ) confidence limits are given on each calibration curve.

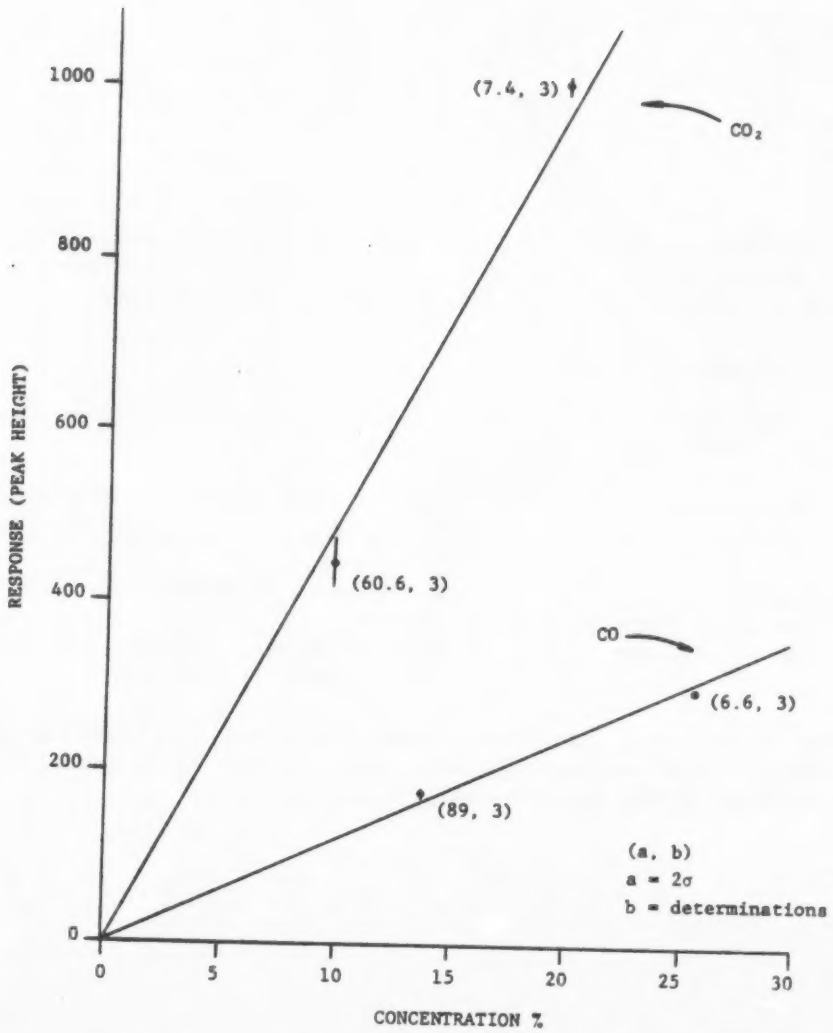

Figure C-6. CO_2 and CO Calibration Curve

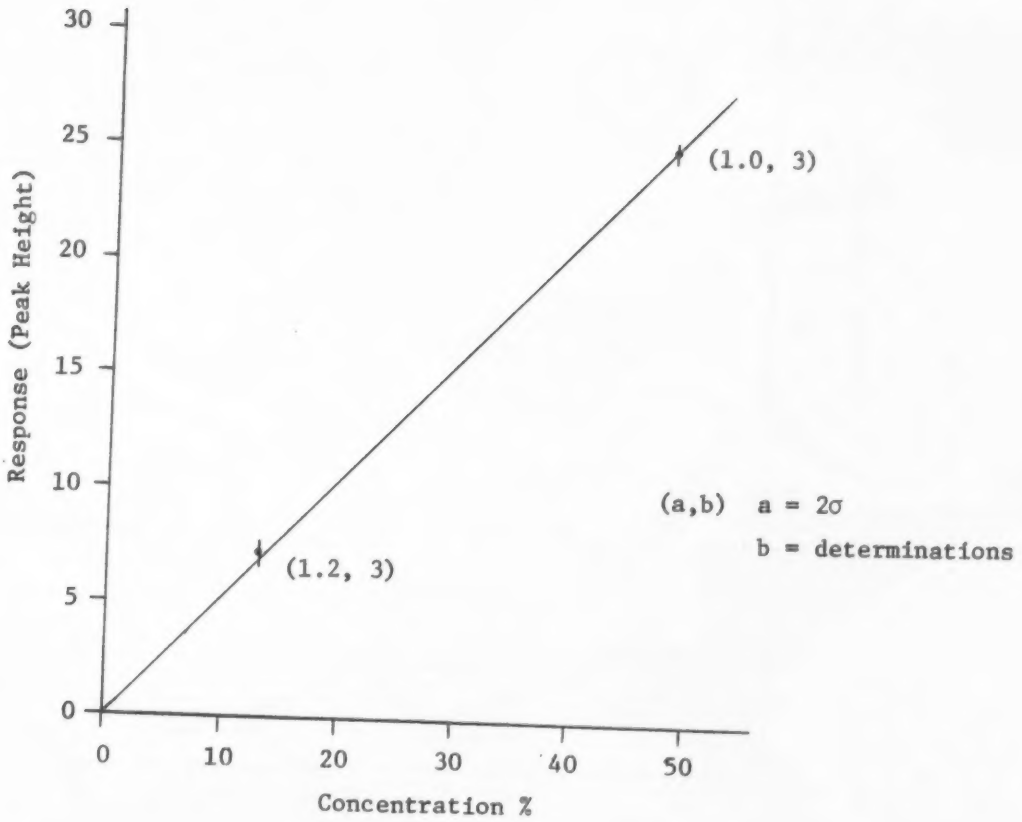

Figure C-7. H_2 Calibration Curve

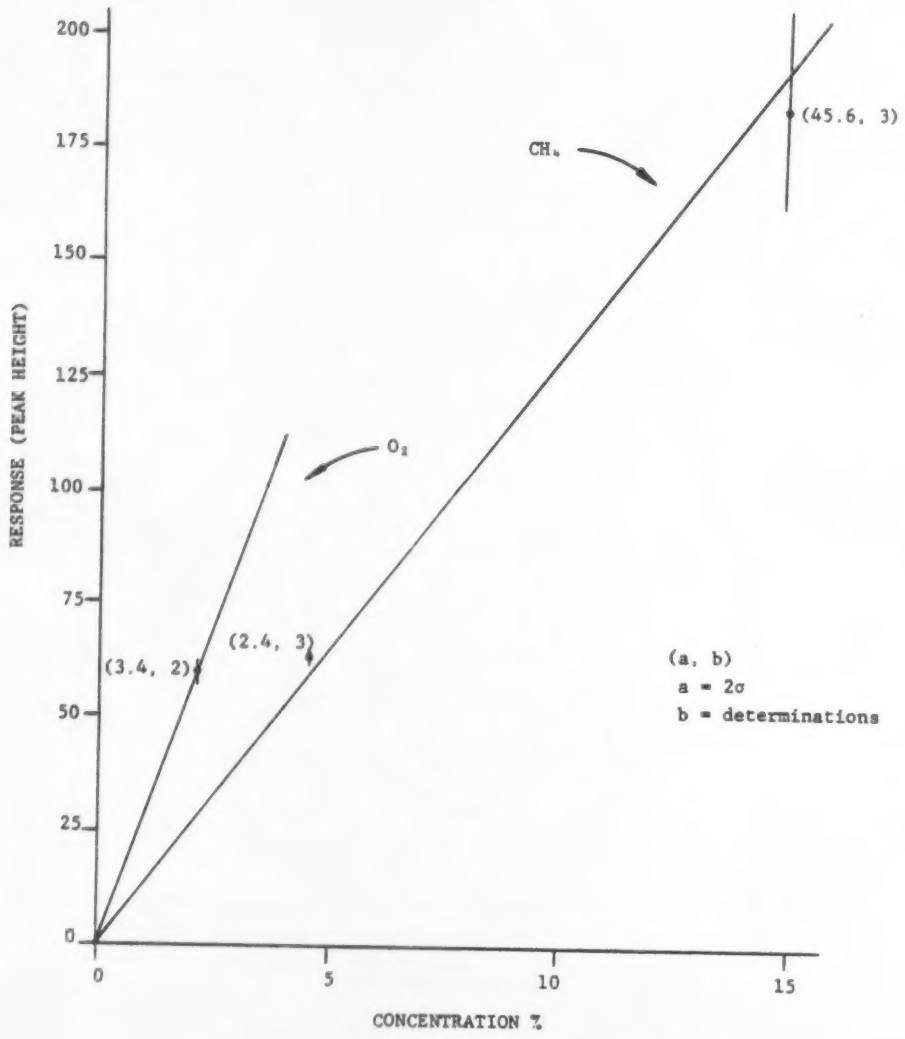

Figure C-8. O_2 and CH_4 Calibration Curve

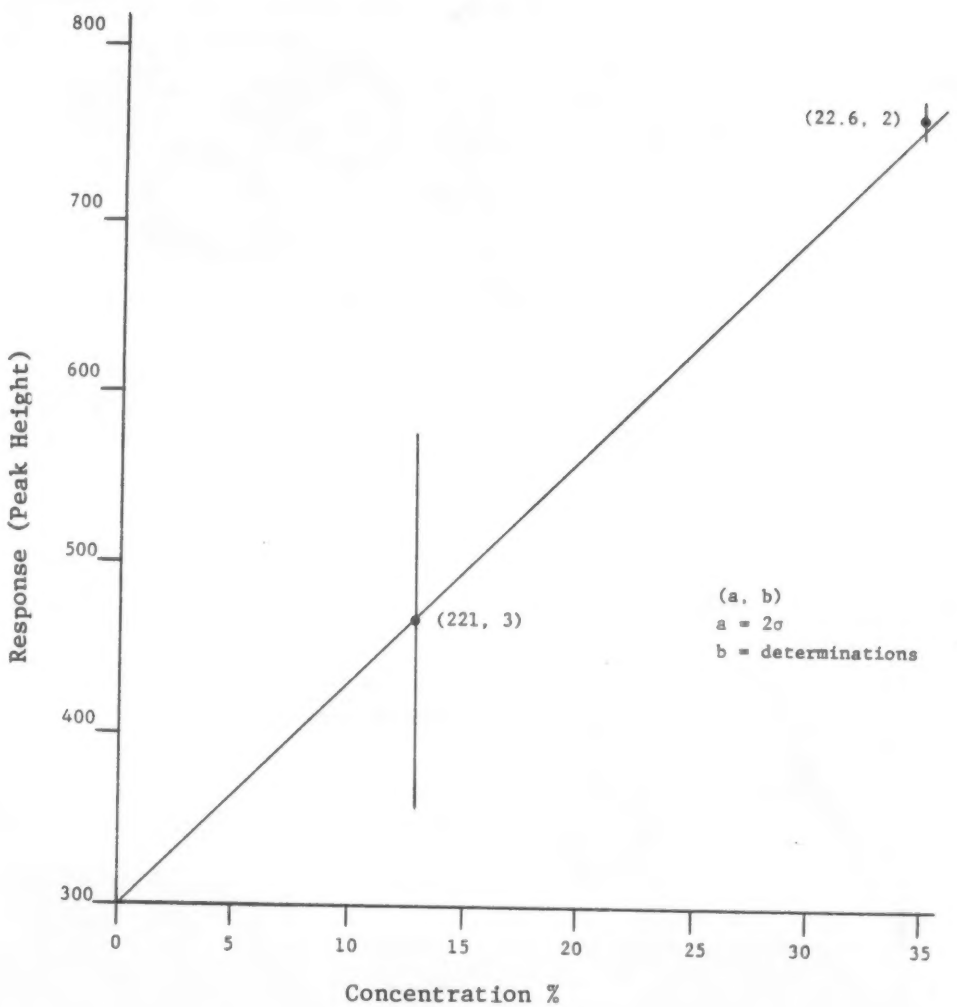

Figure C-9. N_2 Calibration Curve

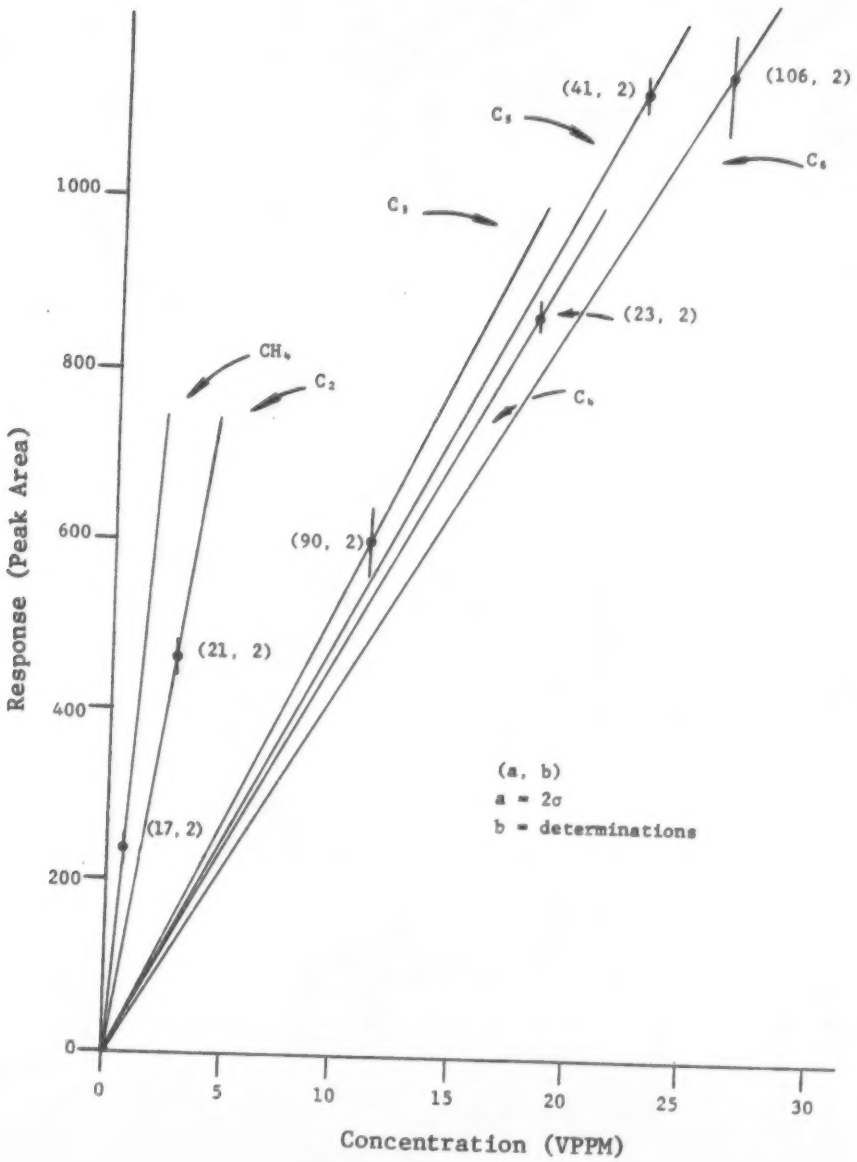

Figure C-10. C_1-C_6 Pariffins Calibration Curve

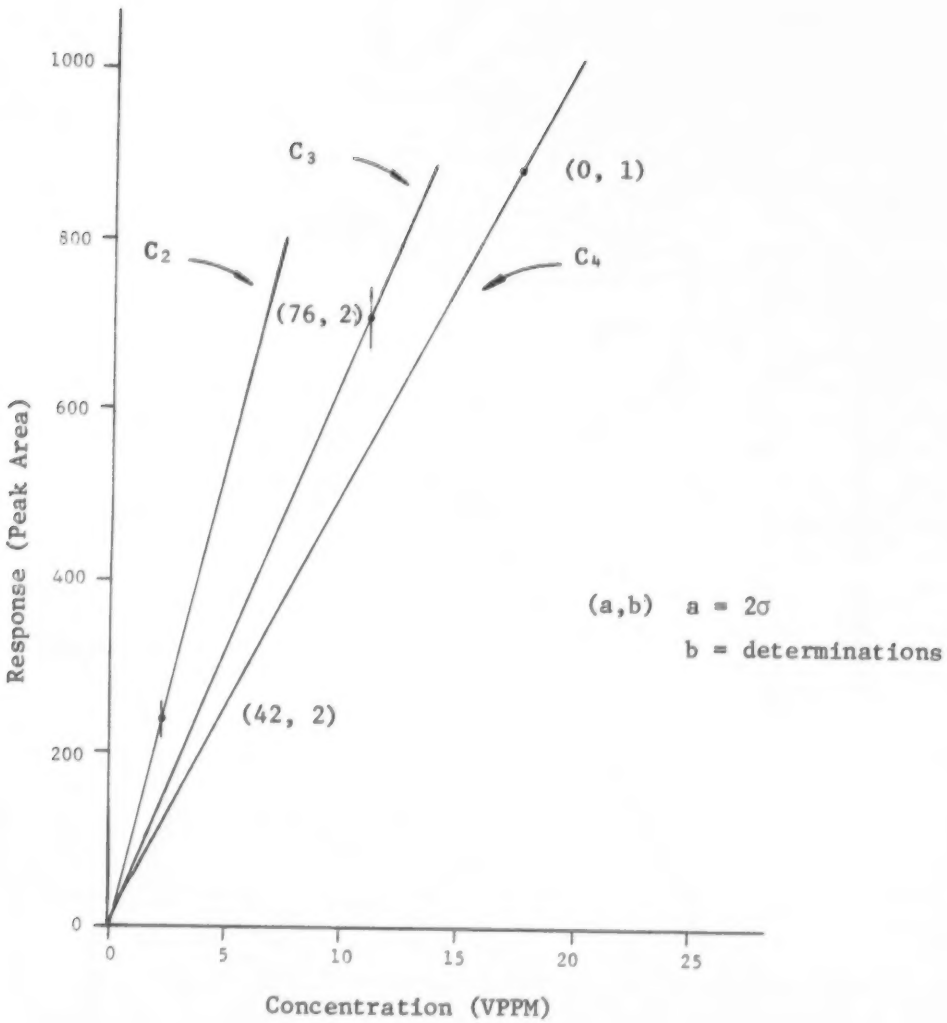

Figure C-11. C_2-C_4 Olefins Calibration Curve

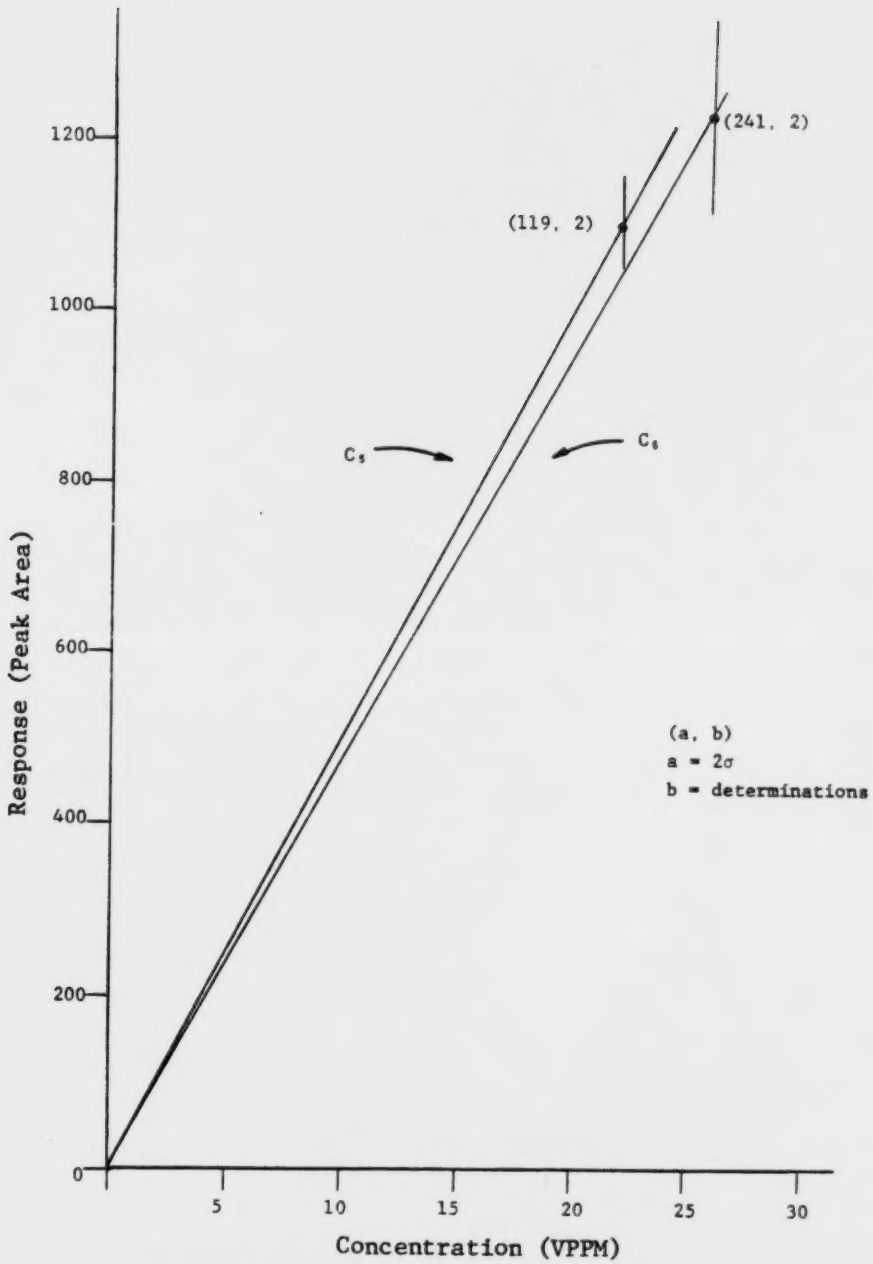

Figure C-12. C_5, C_6 Olefins Calibration Curve

C4.0 ORGANIC ANALYSIS

Preliminary laboratory analysis of the samples was done using previously established methods (Ref. C-5). Modifications to these procedures are included with the following descriptions of the analytical methods. The detailed analysis was done using specific ion monitoring GC-MS, after a halogen-specific detector was used for gas chromatography. The halogen-specific GC was added as a means of obtaining information which could be used for specific compounds and classes of compounds at very low additional cost to the detailed phase of the analysis.

C4.1 Extractions

Aliquots of the aqueous samples were extracted at both pH = 2 and pH = 12. The extractions were done serially with methylene chloride and ethyl ether in order to obtain the widest range of extractable organics. Solid samples were extracted in Soxhlet continuous extractors for 24 hours with methylene chloride followed by 24 hours with ethyl ether. The use of ethyl ether in these extractions was an addition to the previously cited procedures (Ref. C-5).

Following extractions, the solvent extracts were combined and concentrated using Kuderna-Danish concentrators equipped with Snyder columns.

C4.2 Total Chromatographable Organics (TCO)

The TCO analysis provides a means of quantifying organics in the boiling range from 100°C to 300°C. The compounds eluted were quantified by comparison to n-paraffin standards of the C_7 to C_{17} boiling range. TCO analyses were performed according to the following conditions:

Instrument:	Tracor Model 560 FID-GC
Column:	3.05 m x 2 mm o.d. glass, 10% OV-101 on Supelcoport 100/120 mesh
Carrier:	Nitrogen at 30 ml/min
Oven Program:	50°C for 5 min; 20°C/min to 250°C; 250°C hold until baseline reestablished
Injector:	275°C
Detector:	300°C

Chromatograms were integrated and stored using a Spectra-Physics Model 4000 with a Model 4050 printer-plotter. A C_7 through C_{17} plus C_{20} standard was run to establish retention times and boiling ranges while quantification was done using a C_6, C_{12}, and C_{16} standard at concentrations approximating the sample values. Solvent blanks for all samples were run and subtracted from the samples.

C4.3 Gravimetric Analyses (GRAV)

The GRAV analysis provides a quantification for the non-volatile components in a sample extract. Gravimetric analyses for unfractionated samples were done using a Mettler Model H20 five place analytical balance. A 5 ml aliquot of the sample extract was evaporated at room temperature in a dessicator. If less than 10 mg of material was present, volumetric aliquots were added until a reproducible $\pm$0.1 mg weight in the 10 mg range was achieved. For concentrated extracts, a 1.0 ml aliquot was evaporated in Cargille microbeakers. For GRAV analysis of the LC fractions a Perkin-Elmer AD-2 electronic autobalance was used (Section 4.4). Sample aliquots were taken according to the standard procedure (Ref. C-5). Solvent blanks and LC fraction blanks were run in the same manner as the samples. Prior to use, all glassware was dichromate washed, rinsed with distilled water, then methanol and methylene chloride rinsed.

C4.4 Liquid Chromatographic Separation (LC)

The LC separation gives a fractionation of the sample extract into compound classes based on the polarity. This separation then facilitates the subsequent detailed analysis. This is not a high resolution technique and compound classes may overlap in individual fractions. However with adequate care, reproducible, predictable separations can be achieved.

The samples were prepared for the liquid chromatography according to recommended procedures (Ref. C-5). Extracts which had no TCO portion such as the gasifier ash were evaporated to dryness on silica gel and the silica gel which contained the sample transferred to the head of a prepared LC column. Samples which had TCO content were exchanged from methylene chloride/ethyl ether into cyclopentane using the recommended three 1 ml exchange evaporations. After the exchange volume has been reduced to 1 ml for the last time, the solvent mixture should be less than five percent methylene chloride/ether. This should be sufficiently low not to alter the polarity of the elution series so that no aromatic components will break through into the aliphatic fraction. The LC column parameters were as follows:

Column:	200 mm x 10.5 mm o.d., glass with Teflon® stopcock, glass solvent reservoir, water jacketed, outlet water temperature 20°C
Absorbent:	Silica gel, 60-200 mesh, Davidson, Grade 950. Soxhlet extracted with methanol, methylene chloride and pentane, activated at 110°C for 2 hours

The LC column was slurry packed and a flow rate of less than 1 ml/min used. Seven LC fractions were collected according to the appropriate elution sequence and volumes (Ref. C-5).

C4.5 Infrared Analysis

Infrared analyses were done using a Perkin-Elmer Model 283 grating spectrophotometer. The GRAV aliquots were taken up in methylene chloride and run as thin films between two sodium chloride plates. Transmission spectra were run from 4000 cm^{-1} to 400 cm^{-1}. Daily quality checks were made to verify that the instrument met the instrument operating requirements outlined (Ref. C-5).

C4.6 Gas Chromatographic Analysis - Hall Detector

Gas chromatography was done using the Hall 700 electrolytic conductivity detector in halogen specific mode. This enabled a measurement to be made analogous to the TCO value that indicated a chromatographic halogen content. Aliquots of the samples prior to the LC separation were run as well as specific fractions which could potentially contain the bulk of the halogenated material. Dual injection mode was utilized as a means of correlating the halogen containing peaks with the FID results. The procedures used were:

Instrument:	Tracor Model 560 Hall/FID/GC
Columns:	3.05 m x 2 mm o.d., glass, 10% OV-101 on Supelcoport 100/120 mesh
Carrier:	Nitrogen at 25 ml/min
Oven Program:	50°C for 5 min; 20°C/min to 300°C; 300°C until baseline
Injector:	250°C
Detector:	Hall = 300°C, FID = 300°C

Samples were solvent exchanged into acetonitrile prior to analysis in order not to overload the Hall detector with halogenated solvent. A chlorinated phenol standard was used as a reference for concentration correlations.

C4.7 Mass Spectrometric Analysis

The LC fractions were submitted for mass spectral analysis following a prioritization scheme based on the MEG's which generated lists of some specific compounds of interest. Selected ion monitoring (SIM) searches were performed to identify organics of interest. This technique is based on the appearance of specific key fragmentation ions within a known GC retention time window. Quantitation was done by response factor comparison to a known amount of d_{10}-anthracene which was used as an internal standard. The selected ions monitored were varied as the gas chromatographic retention times of the various compounds of interest progressed. The mass spectral information obtained was stored on magnetic disk for reference.

The concentrated sample extracts were analyzed using a computer-controlled Hewlett-Packard Model 5985 mass spectrometer system in the specific ion monitoring mode. The analyses were carried out under the following gas chromatographic and mass spectrometer operating conditions:

Column:	1.8 m x 2 mm o.d., glass, 3% SP-2250
Carrier:	Helium at 30 ml/min
Oven Program:	50°C for 4 min; 8°C/min to 260°C; 260°C for 8 min
Ionization Voltage:	70eV

Tenax-GC with silica gel was used to trap components in the boiling range of 30°C to 150°C and allow analysis for benzene-toluene-xylene compounds at lower concentrations. The Tenax-GC tube was analyzed by thermal desorption gas chromatography-mass spectrometry (GC-MS). With this technique, the glass-lined steel tube which contains the volatile sample sorbed onto Tenax-GC and silica gel is heated while nitrogen flows through the tube. The nitrogen stream carries the thermally desorbed organics onto the GC column where they are separated and then into the mass spectrometer for quantification. Hexadeuterobenzene was used as the internal standard for this analysis.

C4.8 Chemical Oxygen Demand (COD)

Chemical oxygen demand was determined by the standard method (Ref. C-1). Samples are refluxed for two hours with potassium dichromate and sulfuric acid. After cooling, the remaining dichromate is titrated with ferrous ammonium sulfate. The amount of potassium dichromate consumed is proportional to the amount of oxidizable organic matter in the sample. A detection limit of 5 ppm was reported.

C4.9 Biochemical Oxygen Demand (BOD)

BOD was determined according to specified procedures (Ref. C-1). BOD is a measure of the change in dissolved oxygen after five days incubation at 20°C. An initial dissolved oxygen determination is made using the azide modification of the Winkler titration. In this procedure, iodine is liberated and titrated with a standard sodium thiosulfate solution. After five days a final concentration was determined. The change in dissolved oxygen is related to the amount of orgnaic mattter which is assimilated and oxidized by microorganisms.

C4.10 Phenols

Phenols were analyzed in aqueous samples by standard methods (Ref. C-1). These methods include a distillation procedure in which phenols are removed from interferences and a colorimetric measurement. In the colorimetric procedure, phenols in the distillate react with 4-aminoantipyrine at pH 10 in the presence of potassium ferricyanide to form a colored antipyrine dye. This dye is extracted with chloroform and the absorbance is measured with a spectrophotometer at 460 nm. A detection limit of 10 ppb was reported.

C4.11 Total Organic Carbon (TOC)

TOC was determined using a Dohrmann Model 54 TOC Analyzer. The sample was placed in a sparging reservoir and a potassium persulfate-phosphoric acid reagent was added. The inorganic carbon was purged from the sample, followed by UV oxidation of the organic carbon to CO_2. The CO_2 is then subjected to reductive pyrolysis to produce methane and FID detection of the methane determines the total organic carbon content of the sample. A calibration curve was generated by analyzing known solutions of potassium acid phthalate. A detection limit of 10 ppb was reported.

C5.0 LEACHING STUDIES

Gasifier ash and cyclone dust were extracted using the Resource Conservation and Recovery Act (RCRA) procedure as outlined in the Federal Register of December 18, 1978, "Hazardous Waste, Proposed Guidelines and Regulations" (Ref. C-7). One hundred grams of the air dried solid was weighed into a polyethylene bottle along with a weight of deionized water equal to 16 times the weight of the solid. The pH was adjusted to 5.0 with Ultrex glacial acetic acid. The pH was monitored for one hour and adjusted as needed.

The sample was agitated for 24 hours with a rotary shaker. At the end of the 24 hour leaching, the samples were filtered through a 0.45 micron Millipore filter. The filtrate was diluted to 20 times the initial weight of the solid. The dilute filtrates and blanks were preserved for analysis. The total dissolved solids, total suspended solids, and the pH of the samples were measured. They were also analyzed for:

- Ammonia
- Cyanide
- Chloride
- Fluoride
- Phosphate
- Nitrate
- Nitrite
- Sulfate, and
- Sulfite

using the anion and cation analysis methods given in Section C1.0. Analyses for COD, BOD, TOC, and phenols were done by the methods described in Section C4.0; and trace element analysis were done by the methods outlined in Section C2.0.

REFERENCES

C-1 American Public Health Association, American Water Works Association, and Water Pollution Control Federation, Standard Methods for the Examination of Water and Wastewater, 14th edition. Washington, D.C., American Public Health Association, 1975.

C-2 Baker, R.L., "Determination of Fluoride in Vegetation Using the Specific Ion Electrobe," Anal. Chem. 44(7), 1326, (1972).

C-3 Baumann, Elizabeth W., "Trace Fluoride Determination with Specific Ion Electrode," Anal. Chem. Acta 42, 127-132, (1968).

C-4 Thomas, Josephus, Jr. and Harold J. Gluskoter, "Determination of Fluoride in Coal with the Fluoride Ion-Selective Electrode," Anal. Chem. 46(9), 1321, (1974).

C-5 Lentzen, D.E., D.E. Waggoner, E.D. Estes, and W.F. Gutknecht, IERL-RTP Procedures Manual: Level 1 Environmental Assessment (Second Edition), NTIS No. Pb-293 795, Research Triangle Institute, Research Triangle Park, North Carolina, October 1978.

C-6 Hatch, W. Ronald and Welland L. Ott, "Determination of Submicrogram Quantities of Mercury by Atomic Absorption Spectrometry," Anal. Chem. 40(14), 2085-7, (1968).

C-7 Resource Conservation and Recovery Act, Public Law 95-580.

APPENDIX D
ANALYTICAL DATA

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D1.0 ON-SITE GAS ANALYSIS RESULTS

The gas streams analyzed on-site were the:

- Product Gas
  - prior to the test burner, and
  - at the start-up vent
- Test Burner Flue Gas
- Coal Bin Vent Gas

The anlaysis methods used on-site are given in Appendix C. The analytical data is summarized by gas stream and the analysis parameters for each stream are given in Figure D1.

	Gas Chromatography			Impinger Analysis	
	Fixed Gases	Sulfur Species	Hydrocarbons	Ammonia	Cyanide
Product Gas	•	•	•	•	•
Product Gas (Vent)	•	•	•		
Test Burner Flue Gas	•	•	•	•	•
Coal Bin Vent Gas				•	•

Figure D1. On-Site Gas Analysis Matrix

TABLE D1. GAS CHROMATOGRAPHY ANALYSIS RESULTS: PRODUCT GAS

	DATE: 12-12-78 TIME: 2010	12-12-78 2013
Major Components-%		
CO_2	7.5	7.6
H_2	18.9	18.7
O_2 + Ar	0.38	0.41
N_2	41.8	41.1
CO	30.0	31.1
CH_4	1.4	1.2
Sulfur Species - Vppm		
H_2S	1033	1015
COS	130	137
SO_2	ND	1.4
CS_2	15.8	15.7
Hydrocarbons - Vppm		
CH_4	10222	10116
C_2H_6	725	726
C_2H_4	315	328
C_3-isomers	456	479
C_4-isomers	178	218
C_5-isomers	88	84
C_6-isomers	148	174

ND = not detected.

TABLE D2. AMMONIA AND CYANIDE ANALYSIS RESULTS: PRODUCT GAS

Species	SCM* Sampled	Total µg	vppm
Ammonia	0.0274	20400	1299
Ammonia	0.0298	659100	869
Ammonia	0.0322	271600	357
Cyanide	0.143	37400	236
Cyanide	0.117	27800	215
Cyanide	0.134	22100	150

*SCM at 25°C (77°F) and 101 kPa (1 atm), dry basis.

TABLE D3. GAS CHROMATOGRAPHY ANALYSIS RESULTS: PRODUCT GAS VENT

DATE: / TIME:	12-13-78 1715	12-13-78 1730	12-13-78 1910	12-13-78 1930	12-13-78 2200	12-13-78 2320
Major Components-%	After ESP	Before ESP	Before ESP	After ESP	After ESP	Before ESP
CO_2	8.7	8.6	9.0	9.4	10.8	10.3
H_2	14.4	16.0	15.8	16.8	13.4	15.8
O_2+ Ar	0.58	0.57	0.49	0.54	1.0	0.78
N_2	46.02	45.4	46.4	45.0	50.6	47.7
CO	29.0	28.0	27.0	27.0	23.0	24.0
CH_4	1.3	1.4	1.3	1.3	1.2	1.4
Sulfur Species - Vppm						
H_2S	1055	1140	1098	1209	1024	1121
COS	139	145	145	154	130	145
SO_2	1.0	1.4	2.2	ND	61.9	30.2
CS_2	12.9	15.5	10.6	12.9	9.4	9.8
Hydrocarbons - Vppm						
CH_4	9135☆	10257☆	10105☆	10227☆	8356	9477
C_2H_6	618	701	697	694	540	606
C_2H_4	288	307	347	361	274	307
C_3 + isomers	455	459	462	482	388	422
C_4 + isomers	191	184	199	231	177	174
C_5 + isomers	96	98	98	172	149	598
C_6 + isomers	169	186	199	253	123	250

ND = Not detected.
☆Single analysis only.

TABLE D4. GAS CHROMATOGRAPHY ANALYSIS RESULTS: TEST BURNER FLUE GAS

	DATE:	12/12/78	12/12/78	12/12/78	12/12/78
	TIME:	0130	1535	1551	1715
					*
Major Components - %					
CO_2		3.8	6.0	5.8	6.2
H_2		2.8	ND	ND	ND
O_2 + Ar		16.3	14.1	14.2	19.2
N_2		77.1	79.8	80.0	74.5
CO		ND	ND	ND	ND
CH_4		ND	ND	ND	ND
Sulfur Species - Vppm					
H_2S		19.5	ND	∇ ND	ND
COS		0.2	ND	ND	ND
SO_2		170.0	138.0	39.7	64.0
CS_2		5.0	4.8	1.2	ND
Hydrocarbons - Vppm†					
CH_4					
C_2H_6					
C_2H_4					
C_3 - isomers					
C_4 - isomers		5.9			
C_5 - isomers					3.6
C_6 - isomers				8.0	

∇Single point analyses due to insufficient sample pressure, sample probably diluted with additional air

*Slight condensate visible in sample bomb.

ND = Not detected.

†Hydrocarbons not detected <1 Vppm

TABLE D6. AMMONIA AND CYANIDE ANALYSIS RESULTS: COAL BIN VENT GAS

Species	SCM* Sampled	Total µg	Vppm
Ammonia	0.567	193	0.49
Ammonia	0.475	ND	<.005
Ammonia	0.466	ND	<.005
Cyanide	0.430	27	0.057
Cyanide	0.543	17	0.028
Cyanide	0.574	20	0.032

*SCM at 25°C (77°F) and 101 kPa (1 atm), dry basis.

D2.0 INORGANIC ANALYSIS RESULTS

The results of the laboratory analyses given in the following data sections were obtained using the analytical methods described in Appendix C. The individual samples and the analysis parameters are listed by stream in Figure D2. The analysis results for each sample are presented following the appropriate stream analysis diagrams. The streams analyzed were:

- Product Gas
  - particulates
  - impinger train
- Test Burner
  - particulates
  - resin catch
  - condensate
  - impinger composite
- Gasifier Ash
  - gasifier ash
  - gasifier ash sluice water
- Cyclone Dust
  - cyclone dust
  - cyclone dust quench water

The feed lignite, the service water, and the ash and dust leachate analysis results are also givn in the data sections. Analytical results for the quality assurance blanks are presented also.

SAMPLE NUMBER	SAMPLE TYPE	SSMS	AAS	ICP	RADIO-ACTIVITY	PROX/ ULT	ANION/ CATION
	PRODUCT GAS						
2394	- Particulates	●	●	●			
2395	- Particulate extract	●	●				
2285	- Acid impinger composite	●	●				
2296	- Acid impinger blank	●	●				
2286	- Base impinger composite	●	●				
2285	- Base impinger blank	●	●				
	TEST BURNER						
2298	- SASS cyclone particulates <3 μm	●					
2299	- SASS probe rinse	●	●				
	- SASS condensate	●					
2396	- Extracted XAD resin	●	●				
2398	- XAD resin extract	●	●				
2283	- SASS $Ag_2S_2O_8$ impinger composite	●	●				
	- XAD resin blank	●					
2284	- SASS impinger blank	●	●				
	- CH_2Cl_2 blank	●					
	- Ether blank	●					
	GASIFIER ASH						
2274	- Gasifier ash composite	●	●	●	●	●	
2280	- Gasifier ash sluice water	●	●	●			●
	CYCLONE DUST						
2279	- Cyclone dust	●	●	●	●	●	
2281	- Cyclone dust quench water	●	●	●			●

Figure D2. Inorganic Analysis Matrix

Figure D2. Continued

SAMPLE NUMBER	SAMPLE TYPE	SSMS	AAS	ICP	RADIO-ACTIVITY	PROX/ ULT	ANION/ CATION
	LIGNITE						
2272	- Lignite composite	●	●		●	●	
2266	- Lignite					●	
2267	- Lignite					●	
2268	- Lignite					●	
2269	- Lignite					●	
2270	- Lignite					●	
2271	- Lignite					●	
	SERVICE WATER						
2282	- Service water	●					
	LEACHATES						
2352	- Gasifier ash leachate	●	●				●
2353	- Cyclone dust leachate	●	●				●
2354	- Leachate blank	●	●				●

SAMPLE NUMBER	SAMPLE TYPE	SSMS	AAS	ICP	Radioactivity	Prox/ Ult	Anion/ Cation
2394	Particulates	•	•	•			
2395	Particulate Extract	•	•				
2285	Acid Impinger Composite	•	•				
2296	Acid Impinger Blank	•	•				
2286	Base Impinger Composite	•	•				
2297	Base Impinger Blank	•	•				

Figure D3. Analysis Results Matrix: Product Gas

TABLE D7. SSMS ANALYSIS RESULTS: PRODUCT GAS PARTICULATES

Sample #2394 Concentration in ppm weight

ELEMENT	CONC.	ELEMENT	CONC.	ELEMENT	CONC.	ELEMENT	CONC.
Uranium	1	Terbium	0.2	Ruthenium		Vanadium	11
Thorium	2	Gadolinium	0.6	Molybdenum	3	Titanium	550
Bismuth	0.8	Europium	0.3	Niobium	4	Scandium	6
Lead	39	Samarium	2	Zirconium	27	Calcium	MC
Thallium	1	Neodymium	3	Yttrium	9	Potassium	MC
Mercury	NR	Praseodymium	2	Strontium	MC	Chlorine	MC
Gold		Cerium	16	Rubidium	2	Sulfur	MC
Platinum		Lanthanum	11	Bromine	41	Phosphorus	MC
Iridium		Barium	MC	Selenium	3	Silicon	MC
Osmium		Cesium	0.7	Arsenic	89	Aluminum	MC
Rhenium	≤0.1	Iodine	1	Germanium	2	Magnesium	MC
Tungsten	1	Tellurium	0.3	Gallium	7	Sodium	MC
Tantalum		Antimony	2	Zinc	70	Fluorine	≈370
Hafnium	0.9	Tin	4	Coppe-	110	Oxygen	NR
Lutecium		Indium	STD	Nickel	35	Nitrogen	NR
Ytterbium		Cadmium	3	Cobalt	4	Carbon	NR
Thulium	<0.1	Silver	*30	Iron	MC	Boron	200
Erbium	0.2	Palladium		Manganese	13	Beryllium	0.8
Holmium	0.3	Rhodium		Chromium	27	Lithium	37
Dysprosium	0.5					Hydrogen	NR

STD - Internal Standard
NR - Not Reported
All elements not detected <0.1 ppm weight

MC - Major Component MC >1000 ppm
INT - Interference
*Heterogeneous

$$\mu g/m^3 = \frac{\frac{\mu g_{element}}{g_{particulate}} \times 25.2\ g_{particulate}}{7.800\ m^3}$$

TABLE D8. SSMS ANALYSIS RESULTS: PRODUCT GAS PARTICULATE EXTRACT

Sample #2395

Concentration in µg/ml

ELEMENT	CONC.	ELEMENT	CONC.	ELEMENT	CONC.	ELEMENT	CONC.
Uranium		Terbium		Ruthenium		Vanadium	0.002
Thorium		Gadolinium		Molybdenum	0.003	Titanium	0.04
Bismuth		Europium		Niobium		Scandium	≤0.001
Lead	0.02	Samarium		Zirconium	0.01	Calcium	0.6
Thallium		Neodymium		Yttrium	0.003	Potassium	0.2
Mercury	NR	Praseodymium		Strontium	0.008	Chlorine	0.008
Gold		Cerium		Rubidium	<0.001	Sulfur	0.7
Platinum		Lanthanum		Bromine		Phosphorus	0.1
Iridium		Barium	0.2	Selenium	0.003	Silicon	9
Osmium		Cesium		Arsenic	0.08	Aluminum	0.05
Rhenium		Iodine		Germanium	0.002	Magnesium	0.2
Tungsten		Tellurium		Gallium		Sodium	0.2
Tantalum		Antimony	0.003	Zinc	0.1	Fluorine	≈0.3
Hafnium		Tin	≤0.002	Copper	0.06	Oxygen	NR
Lutecium		Indium	STD	Nickel	0.02	Nitrogen	NR
Ytterbium		Cadmium	≤0.002	Cobalt	0.003	Carbon	NR
Thulium		Silver	0.04	Iron	<0.002	Boron	0.01
Erbium		Palladium		Manganese	0.002	Beryllium	
Holmium		Rhodium		Chromium	0.009	Lithium	0.003
Dysprosium						Hydrogen	NR

STD - Internal Standard
NR - Not Reported
All elements not detected <0.001 µg/ml

MC - Major Component
INT - Interference

$$\mu g/m^3 = \frac{\left(\frac{\mu g_{element}}{ml_{extractant}} \times 3009\ ml_{extractant}\right) - \left(\frac{\mu g_{element}}{ml_{CH_2Cl_2\ blank}} \times 300\ ml_{CH_2Cl_2\ blank}\right)}{7.800\ m^3}$$

TABLE D9. SSMS ANALYSIS RESULTS: PRODUCT GAS ACID IMPINGER COMPOSITE

Sample #2285 Concentration in µg/ml

ELEMENT	CONC.	ELEMENT	CONC.	ELEMENT	CONC.	ELEMENT	CONC.
Uranium	0.01	Terbium		Ruthenium		Vanadium	0.004
Thorium		Gadolinium		Molybdenum		Titanium	0.06
Bismuth		Europium		Niobium		Scandium	≤ 0.001
Lead	0.02	Samarium		Zirconium	0.003	Calcium	2
Thallium		Neodymium		Yttrium		Potassium	0.3
Mercury	NR	Praseodymium		Strontium	0.006	Chlorine	0.06
Gold		Cerium	0.002	Rubidium		Sulfur	2
Platinum		Lanthanum	0.003	Bromine	0.002	Phosphorus	0.2
Iridium		Barium	0.03	Selenium	0.01	Silicon	0.9
Osmium		Cesium		Arsenic	0.05	Aluminum	0.02
Rhenium		Iodine		Germanium		Magnesium	0.1
Tungsten		Tellurium		Gallium	< 0.001	Sodium	0.1
Tantalum		Antimony		Zinc	0.07	Fluorine	≈ 0.05
Hafnium		Tin	0.002	Copper	0.03	Oxygen	NR
Lutecium		Indium	STD	Nickel	0.03	Nitrogen	NR
Ytterbium		Cadmium		Cobalt	0.007	Carbon	NR
Thulium		Silver	0.002	Iron	0.6	Boron	0.002
Erbium		Palladium		Manganese	0.01	Beryllium	
Holmium		Rhodium		Chromium	0.03	Lithium	< 0.001
Dysprosium						Hydrogen	NR

STD - Internal Standard
NR - Not Reported
All elements not detected <0.001 µg/ml
MC - Major Component MC >10 µg/ml
INT - Interference

$$\mu g/m^3 = \frac{\left(\frac{\mu g_{element}}{ml_{acid\ soln}} \times 1048\ ml_{acid\ soln}\right) - \left(\frac{\mu g_{element}}{ml_{acid\ blank}} \times 500\ ml_{acid\ blank}\right)}{2.394\ m^3}$$

TABLE D10. SSMS ANALYSIS RESULTS: PRODUCT GAS ACID IMPINGER BLANK

Sample #2296

Concentration in µg/ml

ELEMENT	CONC.	ELEMENT	CONC.	ELEMENT	CONC.	ELEMENT	CONC.
Uranium		Terbium		Ruthenium		Vanadium	0.004
Thorium		Gadolinium		Molybdenum		Titanium	0.02
Bismuth		Europium		Niobium		Scandium	<0.001
Lead		Samarium		Zirconium	0.005	Calcium	2
Thallium		Neodymium		Yttrium		Potassium	0.3
Mercury	NR	Praseodymium		Strontium	0.003	Chlorine	0.05
Gold		Cerium		Rubidium		Sulfur	0.06
Platinum		Lanthanum		Bromine		Phosphorus	0.03
Iridium		Barium	0.01	Selenium		Silicon	0.3
Osmium		Cesium		Arsenic		Aluminum	0.04
Rhenium		Iodine		Germanium		Magnesium	0.09
Tungsten		Tellurium		Gallium		Sodium	0.06
Tantalum		Antimony		Zinc	0.05	Fluorine	≈0.06
Hafnium		Tin		Copper	0.009	Oxygen	NR
Lutecium		Indium	STD	Nickel	0.08	Nitrogen	NR
Ytterbium		Cadmium		Cobalt	<0.001	Carbon	NR
Thulium		Silver	0.02	Iron	0.4	Boron	0.002
Erbium		Palladium		Manganese	0.005	Beryllium	
Holmium		Rhodium		Chromium	0.009	Lithium	<0.001
Dysprosium						Hydrogen	NR

STD - Internal Standard
NR - Not Reported
All elements not detected <0.002 µg/ml
MC - Major Component MC >10 µg/ml
INT - Interference

TABLE D11. SSMS ANALYSIS RESULTS: PRODUCT GAS BASE IMPINGER COMPOSITE

Sample #2286 — Concentration in µg/ml

ELEMENT	CONC.	ELEMENT	CONC.	ELEMENT	CONC.	ELEMENT	CONC.
Uranium		Terbium		Ruthenium		Vanadium	0.03
Thorium		Gadolinium		Molybdenum		Titanium	0.03
Bismuth		Europium		Niobium		Scandium	≤0.01
Lead	0.08	Samarium		Zirconium		Calcium	4
Thallium		Neodymium		Yttrium		Potassium	0.3
Mercury	NR	Praseodymium		Strontium	0.009	Chlorine	1
Gold		Cerium		Rubidium	0.008	Sulfur	MC
Platinum		Lanthanum		Bromine		Phosphorus	0.08
Iridium		Barium	0.04	Selenium		Silicon	3
Osmium		Cesium		Arsenic	0.02	Aluminum	0.02
Rhenium		Iodine		Germanium		Magnesium	≤0.09
Tungsten		Tellurium		Gallium	0.1	Sodium	MC
Tantalum	0.8	Antimony		Zinc	0.1	Fluorine	≈2
Hafnium		Tin		Copper	0.06	Oxygen	NR
Lutecium		Indium	STD	Nickel	0.07	Nitrogen	NR
Ytterbium		Cadmium		Cobalt	0.002	Carbon	NR
Thulium		Silver	0.2	Iron	1	Boron	0.09
Erbium		Palladium		Manganese	0.02	Beryllium	
Holmium		Rhodium		Chromium	0.03	Lithium	0.03
Dysprosium						Hydrogen	NR

STD - Internal Standard
NR - Not Reported
All elements not detected <0.009 µg/ml
MC - Major Component MC >10 µg/ml
INT - Interference

$$\mu g/m^3 = \frac{\left(\frac{\mu g_{element}}{ml_{base\ soln}} \times 617\ ml_{base\ soln}\right) - \left(\frac{\mu g_{element}}{ml_{base\ blank}} \times 500\ ml_{base\ blank}\right)}{2.394\ m^3}$$

TABLE D12. SSMS ANALYSIS RESULTS: PRODUCT GAS BASE IMPINGER BLANK

Sample #2297 Concentration in µg/ml

ELEMENT	CONC.	ELEMENT	CONC.	ELEMENT	CONC.	ELEMENT	CONC.
Uranium		Terbium		Ruthenium		Vanadium	0.08
Thorium		Gadolinium		Molybdenum		Titanium	0.03
Bismuth		Europium		Niobium		Scandium	≤0.03
Lead		Samarium		Zirconium		Calcium	5
Thallium		Neodymium		Yttrium		Potassium	3
Mercury	NR	Praseodymium		Strontium		Chlorine	3
Gold		Cerium		Rubidium		Sulfur	MC
Platinum		Lanthanum		Bromine		Phosphorus	0.04
Iridium		Barium		Selenium	≤0.06	Silicon	MC
Osmium		Cesium		Arsenic	0.04	Aluminum	0.2
Rhenium		Iodine		Germanium		Magnesium	1
Tungsten		Tellurium		Gallium	0.06	Sodium	MC
Tantalum	7	Antimony		Zinc	0.07	Fluorine	MC
Hafnium		Tin		Copper	0.08	Oxygen	NR
Lutecium		Indium	STD	Nickel	0.04	Nitrogen	NR
Ytterbium		Cadmium		Cobalt	0.004	Carbon	NR
Thulium		Silver	0.1	Iron	0.3	Boron	0.05
Erbium		Palladium		Manganese	0.006	Beryllium	
Holmium		Rhodium		Chromium	0.02	Lithium	0.008
Dysprosium						Hydrogen	NR

STD - Internal Standard
NR - Not Reported
All elements not detected <0.02 µg/ml
MC - Major Component MC >10 µg/ml
INT - Interference

TABLE D13. VOLATILE METALS BY AAS: PRODUCT GAS

SAMPLE NUMBER	SAMPLE TYPE	As	Hg	Sb	Se
2394	Particulates	77	2.6	<.4	15
2395	Particulate Extract	.31	17	<1	.40
2285	Acid Impinger Composite	.043	.007	<.06	.011
2296	Acid Impinger Blank	<.005	<.0002	<.06	.018
2286	Base Impinger Composite	.005	.0013	<.06	.015
2297	Base Impinger Blank	<.005	<.0002	<.06	<.01

As ppm: solids µg/g; liquids µg/ml.

TABLE D14. ICP RESULTS: PRODUCT GAS PARTICULATES

Concentration in ppm weight (µg/g)

	Analysis #1	Analysis #2
Ag	<6.20	24.
Ca	45100	44600
Fe	10100	10500
Ni	<25.	41.22
V	<12.	15.
Al	8400	8300
Cd	81.	87.
Mg	12200	12100
Pb	<87.	<87.
Zn	130	140
As	<99.	<99.
Co	<190	<190
Mn	33.	37.
Sn	<50.	<20.
B	170.	170.
Cr	30.	50.
Mo	<50.	<50.
Sr	1200	1200
Ba	2300	23000
Cu	82.	70.
Na	<6200	6500
Ti	290	280

Sample #2394

SAMPLE NUMBER	SAMPLE TYPE	SSMS	AAS	ICP	Radioactivity	Prox/ Ult	Anion/ Cation
2298	SASS Cyclone Particulates < 3 μm	•					
2299	SASS Probe Rinse	•	•				
	SASS Condensate	•					
2396	Extracted XAD-2 Resin	•	•				
	Extracted XAD-2 Resin, duplicate	•					
	XAD-2 Resin Blank	•					
2398	XAD-2 Resin Extract	•	•				
2283	SASS $Ag_2S_2O_8$ Impinger	•	•				
2284	SASS $Ag_2S_2O_8$ Impinger Blank	•	•				
	Methylene Chloride Blank	•					
	Ether Blank	•					

Figure D3. Analysis Results Matrix: Test Burner

TABLE D15. SSMS ANALYSIS RESULTS: TEST BURNER SASS CYCLONE PARTICULATES

<3 μm

Sample #2298 Concentration in ppm weight

ELEMENT	CONC.	ELEMENT	CONC.	ELEMENT	CONC.	ELEMENT	CONC.
Uranium		Terbium		Ruthenium		Vanadium	12
Thorium		Gadolinium		Molybdenum	≤16	Titanium	210
Bismuth		Europium		Niobium	3	Scandium	≤0.8
Lead	260	Samarium		Zirconium	20	Calcium	MC
Thallium		Neodymium	2	Yttrium	1	Potassium	MC
Mercury	NR	Praseodymium	1	Strontium	280	Chlorine	79
Gold		Cerium	27	Rubidium	12	Sulfur	MC
Platinum		Lanthanum	32	Bromine	6	Phosphorus	540
Iridium		Barium	MC	Selenium	≤17	Silicon	MC
Osmium		Cesium	0.5	Arsenic	33	Aluminum	140
Rhenium		Iodine		Germanium	16	Magnesium	MC
Tungsten		Tellurium		Gallium	23	Sodium	MC
Tantalum		Antimony	2	Zinc	79	Fluorine	≈82
Hafnium		Tin	6	Copper	95	Oxygen	NR
Lutecium		Indium	STD	Nickel	110	Nitrogen	NR
Ytterbium		Cadmium	2	Cobalt	11	Carbon	NR
Thulium		Silver	73	Iron	MC	Boron	13
Erbium		Palladium		Manganese	36	Beryllium	
Holmium		Rhodium		Chromium	36	Lithium	99
Dysprosium						Hydrogen	NR

STD - Internal Standard
NR - Not Reported
All elements not detected <0.9 ppm
MC - Major Component MC >1000 ppm
INT - Interference

$$\mu g/m^3 = \frac{\frac{\mu g_{element}}{g_{particulate}} \times 0.03\ g_{particulate}}{27.196\ m^3}$$

TABLE D16. SSMS ANALYSIS RESULTS: TEST BURNER SASS PROBE RINSE

Sample #2299 Concentration in µg/ml

ELEMENT	CONC.	ELEMENT	CONC.	ELEMENT	CONC.	ELEMENT	CONC.
Uranium	≤0.008	Terbium		Ruthenium		Vanadium	<0.001
Thorium		Gadolinium		Molybdenum		Titanium	0.02
Bismuth		Europium		Niobium	≤0.001	Scandium	<0.001
Lead	≤0.005	Samarium		Zirconium	0.002	Calcium	0.6
Thallium		Neodymium		Yttrium	<0.001	Potassium	0.3
Mercury	NR	Praseodymium		Strontium	0.008	Chlorine	0.04
Gold		Cerium		Rubidium		Sulfur	0.2
Platinum		Lanthanum		Bromine	0.004	Phosphorus	0.009
Iridium		Barium	0.003	Selenium	0.002	Silicon	0.4
Osmium		Cesium		Arsenic	<0.001	Aluminum	*0.04
Rhenium		Iodine		Germanium		Magnesium	0.05
Tungsten		Tellurium		Gallium	0.001	Sodium	1
Tantalum	0.004	Antimony		Zinc	0.02	Fluorine	≈0.02
Hafnium		Tin		Copper	0.007	Oxygen	NR
Lutecium		Indium	STD	Nickel	0.01	Nitrogen	NR
Ytterbium		Cadmium		Cobalt	<0.001	Carbon	NR
Thulium		Silver	0.004	Iron	0.05	Boron	<0.001
Erbium		Palladium		Manganese	0.001	Beryllium	
Holmium		Rhodium		Chromium	0.03	Lithium	<0.001
Dysprosium						Hydrogen	NR

STD - Internal Standard
NR - Not Reported
All elements not detected <0.001 µg/ml

MC - Major Component
INT - Interference
*Heterogeneous

$$\mu g/m^3 = \frac{\left(\frac{\mu g_{element}}{ml_{probe\ rinse}} \times 150\ ml_{probe\ rinse}\right) - \left(\frac{\mu g_{element}}{ml_{CH_2Cl_2\ blank}} \times 150\ ml_{CH_2Cl_2\ blank}\right)}{27.196\ m^3}$$

TABLE D17. SSMS ANALYSIS RESULTS: TEST BURNER SASS TRAIN CONDENSATE

Sample #

Concentration in µg/ml

ELEMENT	CONC.	ELEMENT	CONC.	ELEMENT	CONC.	ELEMENT	CONC.
Uranium		Terbium		Ruthenium		Vanadium	0.001
Thorium		Gadolinium		Molybdenum	0.03	Titanium	0.03
Bismuth		Europium		Niobium		Scandium	<0.001
Lead		Samarium		Zirconium	0.006	Calcium	1
Thallium		Neodymium		Yttrium		Potassium	0.1
Mercury	NR	Praseodymium		Strontium	0.003	Chlorine	0.1
Gold		Cerium	0.005	Rubidium		Sulfur	3
Platinum	0.02	Lanthanum	0.008	Bromine		Phosphorus	0.03
Iridium		Barium	0.02	Selenium		Silicon	0.3
Osmium		Cesium		Arsenic	≤0.002	Aluminum	0.04
Rhenium		Iodine		Germanium		Magnesium	≤0.04
Tungsten		Tellurium		Gallium	≤0.003	Sodium	0.1
Tantalum		Antimony		Zinc	0.01	Fluorine	≈0.3
Hafnium		Tin		Copper	0.007	Oxygen	NR
Lutecium		Indium	STD	Nickel	0.02	Nitrogen	NR
Ytterbium		Cadmium		Cobalt	<0.001	Carbon	NR
Thulium		Silver		Iron	0.05	Boron	0.001
Erbium		Palladium		Manganese	0.002	Beryllium	
Holmium		Rhodium		Chromium	0.004	Lithium	<0.001
Dysprosium						Hydrogen	NR

STD - Internal Standard
NR - Not Reported
All elements not detected <0.003 µg/ml
MC - Major Component MC >10 µg/ml
INT - Interference

$$\mu g/m^3 = \frac{\frac{\mu g_{element}}{ml_{condensate}} \times 1507\ ml_{condensate}}{27.196\ m^3}$$

TABLE D18. SSMS ANALYSIS RESULTS: TEST BURNER EXTRACTED XAD-2 RESIN

Sample #2396

Concentration in ppm weight

ELEMENT	CONC.	ELEMENT	CONC.	ELEMENT	CONC.	ELEMENT	CONC.
Uranium	*1	Terbium		Ruthenium		Vanadium	0.02
Thorium		Gadolinium		Molybdenum	0.4	Titanium	1
Bismuth	0.03	Europium		Niobium	0.02	Scandium	≤0.01
Lead	0.4	Samarium		Zirconium	0.5	Calcium	20
Thallium		Neodymium		Yttrium	0.01	Potassium	2
Mercury	NR	Praseodymium		Strontium	0.3	Chlorine	1
Gold		Cerium	0.04	Rubidium	0.009	Sulfur	4
Platinum		Lanthanum	0.09	Bromine	0.03	Phosphorus	0.2
Iridium		Barium	1	Selenium	≤0.01	Silicon	6
Osmium		Cesium		Arsenic	0.02	Aluminum	0.2
Rhenium		Iodine		Germanium		Magnesium	8
Tungsten		Tellurium		Gallium	0.01	Sodium	1
Tantalum		Antimony	0.02	Zinc	2	Fluorine	≈1
Hafnium		Tin		Copper	0.4	Oxygen	NR
Lutecium		Indium	STD	Nickel	1	Nitrogen	NR
Ytterbium		Cadmium	0.03	Cobalt	2	Carbon	NR
Thulium		Silver	0.2	Iron	2	Boron	0.2
Erbium		Palladium		Manganese	0.2	Beryllium	
Holmium		Rhodium		Chromium	0.3	Lithium	0.006
Dysprosium						Hydrogen	NR

STD - Internal Standard
NR - Not Reported
All elements not detected <0.008 ppm weight
MC - Major Component MC >1000 ppm
INT - Interference
*Heterogeneous

NOTE: Sample was low temperature plasma ashed prior to analysis.

TABLE D19. SSMS ANALYSIS RESULTS: TEST BURNER EXTRACTED XAD-2 RESIN DUPLICATE

Concentration in ppm weight

ELEMENT	CONC.	ELEMENT	CONC.	ELEMENT	CONC.	ELEMENT	CONC.
Uranium	0.8	Terbium		Ruthenium		Vanadium	0.07
Thorium		Gadolinium		Molybdenum	2	Titanium	0.6
Bismuth		Europium		Niobium	0.09	Scandium	≤0.03
Lead	0.4	Samarium		Zirconium	1	Calcium	28
Thallium		Neodymium		Yttrium	0.03	Potassium	3
Mercury	NR	Praseodymium	0.03	Strontium	0.3	Chlorine	2
Gold		Cerium	0.06	Rubidium	0.02	Sulfur	17
Platinum		Lanthanum	0.09	Bromine	0.2	Phosphorus	8
Iridium		Barium	0.5	Selenium	0.07	Silicon	8
Osmium		Cesium		Arsenic	0.06	Aluminum	0.5
Rhenium		Iodine	0.05	Germanium		Magnesium	4
Tungsten		Tellurium		Gallium	0.03	Sodium	1
Tantalum		Antimony		Zinc	1	Fluorine	≈8
Hafnium		Tin	0.08	Copper	2	Oxygen	NR
Lutecium		Indium	STD	Nickel	0.7	Nitrogen	NR
Ytterbium		Cadmium		Cobalt	2	Carbon	NR
Thulium		Silver	0.07	Iron	21	Boron	0.04
Erbium		Palladium		Manganese	0.1	Beryllium	
Holmium		Rhodium		Chromium	3	Lithium	0.02
Dysprosium						Hydrogen	NR

STD - Internal Standard
NR - Not Reported
All elements not detected <0.02 ppm weight

MC - Major Component
INT - Interference

NOTE: Sample was low temperature plasma ashed prior to analysis.

$$\mu g/m^3 = \frac{\left(\frac{\mu g_{element}}{g_{XAD-2}} \times 205\ g_{XAD-2}\right) - \left(\frac{\mu g_{element}}{g_{XAD-2\ blank}} \times 205\ g_{XAD-2\ blank}\right)}{27.196\ m^3}$$

TABLE D20. SSMS ANALYSIS RESULTS: XAD-2 RESIN BLANK

Sample #

Concentration in ppm weight

ELEMENT	CONC.	ELEMENT	CONC.	ELEMENT	CONC.	ELEMENT	CONC.
Uranium	3	Terbium		Ruthenium		Vanadium	<0.1
Thorium	2	Gadolinium		Molybdenum	0.6	Titanium	6
Bismuth		Europium		Niobium	≤0.1	Scandium	<0.1
Lead	1	Samarium		Zirconium	0.3	Calcium	120
Thallium		Neodymium		Yttrium	<0.1	Potassium	>270
Mercury	NR	Praseodymium	<0.1	Strontium	0.9	Chlorine	0.9
Gold		Cerium	0.6	Rubidium	<0.1	Sulfur	>140
Platinum		Lanthanum	0.9	Bromine	0.5	Phosphorus	250
Iridium		Barium	2	Selenium		Silicon	17
Osmium		Cesium	<0.1	Arsenic	<0.1	Aluminum	>22
Rhenium		Iodine	<0.1	Germanium		Magnesium	MC
Tungsten		Tellurium		Gallium	<0.1	Sodium	>56
Tantalum		Antimony		Zinc	4	Fluorine	≈2
Hafnium		Tin	<0.1	Copper	1	Oxygen	NR
Lutecium		Indium	STD	Nickel	2	Nitrogen	NR
Ytterbium		Cadmium		Cobalt	0.2	Carbon	NR
Thulium		Silver		Iron	5	Boron	0.2
Erbium		Palladium		Manganese	0.5	Beryllium	<0.1
Holmium		Rhodium		Chromium	0.1	Lithium	<0.1
Dysprosium						Hydrogen	NR

STD - Internal Standard
NR - Not Reported
All elements not detected 0.02 ppm
MC - Major Component
INT - Interference

NOTE: Sample was plasma ashed prior to analysis.

TABLE D21. SSMS ANALYSIS RESULTS: TEST BURNER XAD-2 RESIN EXTRACT

Sample #2398 Concentration in µg/ml

ELEMENT	CONC.	ELEMENT	CONC.	ELEMENT	CONC.	ELEMENT	CONC.
Uranium		Terbium		Ruthenium		Vanadium	<0.001
Thorium		Gadolinium		Molybdenum	0.1	Titanium	0.02
Bismuth		Europium		Niobium		Scandium	<0.001
Lead		Samarium		Zirconium	0.007	Calcium	6
Thallium		Neodymium		Yttrium	0.005	Potassium	*6
Mercury	NR	Praseodymium		Strontium	0.006	Chlorine	0.3
Gold		Cerium		Rubidium	0.002	Sulfur	0.1
Platinum		Lanthanum		Bromine		Phosphorus	2
Iridium		Barium	0.02	Selenium		Silicon	0.2
Osmium		Cesium		Arsenic	0.008	Aluminum	*0.2
Rhenium		Iodine		Germanium		Magnesium	0.09
Tungsten		Tellurium		Gallium		Sodium	0.3
Tantalum		Antimony		Zinc	0.01	Fluorine	≈0.7
Hafnium		Tin		Copper	0.003	Oxygen	NR
Lutecium		Indium	STD	Nickel	0.02	Nitrogen	NR
Ytterbium		Cadmium		Cobalt	0.002	Carbon	NR
Thulium		Silver	0.004	Iron	0.07	Boron	0.009
Erbium		Palladium		Manganese	0.006	Beryllium	
Holmium		Rhodium		Chromium	0.02	Lithium	<0.001
Dysprosium						Hydrogen	NR

STD - Internal Standard
NR - Not Reported
All elements not detected <0.004 µg/ml

MC - Major Component MC >10 µg/ml
INT - Interference
*Heterogeneous

$$\mu g/m^3 = \frac{\left(\frac{\mu g_{element}}{ml_{extract}} \times 1652\ ml_{extract}\right) - \left[\left(\frac{\mu g_{element}}{ml_{CH_2Cl_2\ blank}} \times 790\ ml_{CH_2Cl_2\ blank} + \frac{\mu g_{element}}{ml_{Et_2O\ blank}} \times 862\ ml_{Et_2O\ blank}\right)\right]}{27.196\ m^3}$$

TABLE D22. SSMS ANALYSIS RESULTS: METHYLENE CHLORIDE BLANK

Sample #

Concentration in µg/ml

ELEMENT	CONC.	ELEMENT	CONC.	ELEMENT	CONC.	ELEMENT	CONC.
Uranium		Terbium		Ruthenium		Vanadium	≤0.004
Thorium		Gadolinium		Molybdenum	0.02	Titanium	0.01
Bismuth		Europium		Niobium		Scandium	<0.001
Lead		Samarium		Zirconium	0.01	Calcium	0.2
Thallium		Neodymium	*0.01	Yttrium		Potassium	0.04
Mercury	NR	Praseodymium	*0.006	Strontium		Chlorine	0.1
Gold		Cerium	*0.007	Rubidium		Sulfur	0.2
Platinum		Lanthanum	*0.01	Bromine		Phosphorus	0.009
Iridium		Barium	*0.01	Selenium		Silicon	0.9
Osmium		Cesium		Arsenic	0.002	Aluminum	0.005
Rhenium		Iodine		Germanium		Magnesium	0.03
Tungsten		Tellurium		Gallium	≤0.004	Sodium	0.01
Tantalum		Antimony		Zinc	0.02	Fluorine	≈0.09
Hafnium		Tin		Copper	0.004	Oxygen	NR
Lutecium		Indium	STD	Nickel	0.02	Nitrogen	NR
Ytterbium		Cadmium		Cobalt	<0.001	Carbon	NR
Thulium		Silver	0.004	Iron	0.03	Boron	0.001
Erbium		Palladium		Manganese	0.003	Beryllium	
Holmium		Rhodium		Chromium	0.007	Lithium	<0.001
Dysprosium						Hydrogen	NR

STD - Internal Standard
NR - Not Reported
All elements not detected <0.02 ppm
MC - Major Component
INT - Interference

NOTE: Sample was plasma ashed prior to analysis.

TABLE D23. SSMS ANALYSIS RESULTS: ETHER BLANK

Sample #

Concentration in µg/ml

ELEMENT	CONC.	ELEMENT	CONC.	ELEMENT	CONC.	ELEMENT	CONC.
Uranium		Terbium		Ruthenium		Vanadium	≤0.001
Thorium		Gadolinium		Molybdenum	0.03	Titanium	0.02
Bismuth		Europium		Niobium		Scandium	<0.001
Lead		Samarium		Zirconium	0.01	Calcium	0.6
Thallium		Neodymium		Yttrium		Potassium	0.05
Mercury	NR	Praseodymium		Strontium	0.003	Chlorine	0.09
Gold		Cerium		Rubidium		Sulfur	0.01
Platinum		Lanthanum		Bromine		Phosphorus	0.02
Iridium		Barium		Selenium		Silicon	0.3
Osmium		Cesium		Arsenic		Aluminum	0.005
Rhenium		Iodine		Germanium		Magnesium	0.05
Tungsten		Tellurium		Gallium	≤0.003	Sodium	0.02
Tantalum		Antimony		Zinc	0.02	Fluorine	≈0.1
Hafnium		Tin		Copper	0.002	Oxygen	NR
Lutecium		Indium	STD	Nickel	0.02	Nitrogen	NR
Ytterbium		Cadmium		Cobalt	<0.001	Carbon	NR
Thulium		Silver		Iron	0.02	Boron	0.001
Erbium		Palladium		Manganese	0.002	Beryllium	
Holmium		Rhodium		Chromium	0.002	Lithium	<0.001
Dysprosium						Hydrogen	NR

STD - Internal Standard
NR - Not Reported
All elements not detected <0.002 µg/ml

MC - Major Component MC >10 µg/ml
INT - Interference
*Heterogeneous

TABLE D24. SSMS ANALYSIS RESULTS: SASS $Ag_2S_2O_8$ IMPINGER COMPOSITE

Sample #2283 — Concentration in µg/ml

ELEMENT	CONC.	ELEMENT	CONC.	ELEMENT	CONC.	ELEMENT	CONC.
Uranium		Terbium		Ruthenium		Vanadium	0.02
Thorium		Gadolinium		Molybdenum	0.01	Titanium	0.1
Bismuth		Europium		Niobium		Scandium	≤0.001
Lead	0.07	Samarium		Zirconium	0.01	Calcium	2
Thallium		Neodymium		Yttrium		Potassium	1
Mercury	NR	Praseodymium		Strontium	0.01	Chlorine	0.05
Gold		Cerium	0.001	Rubidium	<0.001	Sulfur	>6
Platinum	0.003	Lanthanum	0.002	Bromine	0.002	Phosphorus	0.3
Iridium		Barium	0.02	Selenium	0.009	Silicon	1
Osmium		Cesium	0.01	Arsenic	0.004	Aluminum	0.04
Rhenium		Iodine	0.004	Germanium		Magnesium	0.1
Tungsten		Tellurium		Gallium	0.007	Sodium	0.8
Tantalum		Antimony		Zinc	0.1	Fluorine	≈0.1
Hafnium		Tin	0.008	Copper	0.05	Oxygen	NR
Lutecium		Indium	STD	Nickel	0.3	Nitrogen	NR
Ytterbium		Cadmium	0.003	Cobalt	0.7	Carbon	NR
Thulium		Silver	MC	Iron	0.5	Boron	0.02
Erbium		Palladium		Manganese	0.1	Beryllium	
Holmium		Rhodium		Chromium	0.1	Lithium	<0.001
Dysprosium						Hydrogen	NR

STD - Internal Standard
NR - Not Reported
All elements not detected <0.001 µg/ml
MC - Major Component MC >10 µg/ml
INT - Interference

NOTE: Sample was thermally ashed prior to analysis at 300°C.

$$\mu g/m^3 = \frac{\left(\frac{\mu g_{element}}{ml_{imp\ soln}} \times 4575\ ml_{imp\ soln}\right) - \left(\frac{\mu g_{element}}{ml_{imp\ soln}} \times 2250\ ml_{imp\ blank}\right)}{27.196\ m^3}$$

TABLE D25. SSMS ANALYSIS RESULTS: SASS $Ag_2S_2O_8$ IMPINGER BLANK

Sample #2284 Concentration in µg/ml

ELEMENT	CONC.	ELEMENT	CONC.	ELEMENT	CONC.	ELEMENT	CONC.
Uranium		Terbium		Ruthenium		Vanadium	<0.001
Thorium		Gadolinium		Molybdenum		Titanium	0.01
Bismuth		Europium		Niobium		Scandium	≤0.003
Lead	0.02	Samarium		Zirconium		Calcium	0.9
Thallium		Neodymium		Yttrium		Potassium	6
Mercury	NR	Praseodymium		Strontium	0.001	Chlorine	0.03
Gold		Cerium	0.003	Rubidium	<0.001	Sulfur	MC
Platinum		Lanthanum	0.005	Bromine		Phosphorus	0.2
Iridium		Barium	0.01	Selenium	0.003	Silicon	0.2
Osmium		Cesium	0.007	Arsenic		Aluminum	0.2
Rhenium		Iodine		Germanium		Magnesium	0.05
Tungsten		Tellurium		Gallium		Sodium	6
Tantalum		Antimony		Zinc	0.07	Fluorine	≈0.6
Hafnium		Tin		Copper	0.1	Oxygen	NR
Lutecium		Indium	STD	Nickel	0.09	Nitrogen	NR
Ytterbium		Cadmium	≤0.004	Cobalt	0.001	Carbon	NR
Thulium		Silver	MC	Iron	0.2	Boron	0.002
Erbium		Palladium		Manganese	0.003	Beryllium	
Holmium		Rhodium		Chromium	0.05	Lithium	0.003
Dysprosium						Hydrogen	NR

STD - Internal Standard
NR - Not Reported
All elements not detected <0.002 µg/ml
MC - Major Component MC >10 µg/ml
INT - Interference

TABLE D26. VOLATILE METALS BY AAS: TEST BURNER

SAMPLE NUMBER	SAMPLE TYPE	As	Hg	Sb	Se
2299	SASS Probe Rinse	0.005	0.0002	<0.06	0.015
2396	Extracted XAD-2 Resin	2.7	0.18	<0.3	<1.1
2398	XAD-2 Resin Extract	1.0	0.27	<0.06	<2.0
2283	SASS $Ag_2S_2O_8$ Impinger Composite	0.033	0.0007	<0.06	0.032
2284	SSAS $Ag_2S_2O_8$ Impinger Blank	0.014	0.0048	<0.06	<0.01

As ppm: solids µg/g; liquids µg/ml.

SAMPLE NUMBER	SAMPLE TYPE	SSMS	AAS	ICP	Radioactivity	Prox/ Ult	Anion/ Cation
2274	Gasifier Ash Composite	•	•	•	•	•	
2280	Gasifier Ash Sluice Water	•	•	•			•

Figure D4. Analysis Results Matrix: Gasifier Ash

TABLE D27. SSMS ANALYSIS RESULTS: GASIFIER ASH COMPOSITE

Sample #2274 Concentration in ppm weight

ELEMENT	CONC.	ELEMENT	CONC.	ELEMENT	CONC.	ELEMENT	CONC.
Uranium	16	Terbium	1	Ruthenium		Vanadium	410
Thorium	23	Gadolinium	4	Molybdenum	15	Titanium	MC
Bismuth		Europium	3	Niobium	31	Scandium	20
Lead	5	Samarium	13	Zirconium	180	Calcium	MC
Thallium		Neodymium	30	Yttrium	59	Potassium	MC
Mercury	NR	Praseodymium	16	Strontium	MC	Chlorine	34
Gold		Cerium	110	Rubidium	47	Sulfur	MC
Platinum		Lanthanum	110	Bromine	2	Phosphorus	MC
Iridium		Barium	MC	Selenium	4	Silicon	MC
Osmium		Cesium	8	Arsenic	9	Aluminum	MC
Rhenium		Iodine	0.2	Germanium	1	Magnesium	MC
Tungsten	1	Tellurium		Gallium	9	Sodium	MC
Tantalum	$\leq$0.8	Antimony	2	Zinc	20	Fluorine	$\approx$190
Hafnium	1	Tin	0.5	Copper	81	Oxygen	NR
Lutecium	0.3	Indium	STD	Nickel	75	Nitrogen	NR
Ytterbium	3	Cadmium	0.8	Cobalt	23	Carbon	NR
Thulium	0.4	Silver	0.6	Iron	MC	Boron	320
Erbium	3	Palladium		Manganese	170	Beryllium	9
Holmium	4	Rhodium		Chromium	100	Lithium	48
Dysprosium	7					Hydrogen	NR

STD - Internal Standard
NR - Not Reported
MC - Major Component MC >1000 ppm
INT - Interference
All elements not detected <0.1 ppm

TABLE D28. SSMS ANALYSIS RESULTS: GASIFIER ASH SLUICE WATER

Sample #2280 Concentration in µg/ml

ELEMENT	CONC.	ELEMENT	CONC.	ELEMENT	CONC.	ELEMENT	CONC.
Uranium		Terbium		Ruthenium		Vanadium	0.02
Thorium		Gadolinium		Molybdenum	0.1	Titanium	0.05
Bismuth		Europium		Niobium	0.002	Scandium	≤0.001
Lead	0.008	Samarium		Zirconium	0.002	Calcium	MC
Thallium		Neodymium		Yttrium	<0.001	Potassium	MC
Mercury	NR	Praseodymium	0.001	Strontium	4	Chlorine	0.5
Gold		Cerium	0.002	Rubidium	0.04	Sulfur	>6
Platinum		Lanthanum	<0.001	Bromine	0.02	Phosphorus	0.4
Iridium		Barium	0.1	Selenium	0.005	Silicon	0.3
Osmium		Cesium	<0.001	Arsenic	0.009	Aluminum	>1
Rhenium		Iodine		Germanium	<0.001	Magnesium	5
Tungsten	0.02	Tellurium		Gallium	0.008	Sodium	>3
Tantalum		Antimony	0.002	Zinc	0.05	Fluorine	≈1
Hafnium		Tin		Copper	0.01	Oxygen	NR
Lutecium		Indium	STD	Nickel	0.02	Nitrogen	NR
Ytterbium		Cadmium	≤0.002	Cobalt	≤0.002	Carbon	NR
Thulium		Silver	0.001	Iron	0.5	Boron	0.2
Erbium		Palladium		Manganese	0.005	Beryllium	<0.001
Holmium		Rhodium		Chromium	0.009	Lithium	0.4
Dysprosium						Hydrogen	NR

STD - Internal Standard
NR - Not Reported
All elements not detected <0.001 µg/ml
MC - Major Component MC >10 µg/ml
INT - Interference

TABLE D29. VOLATILE METALS BY AAS: GASIFIER ASH

SAMPLE NUMBER	SAMPLE TYPE	As	Hg	Sb	Se
2274	Gasifier Ash	30	1.7	<0.4	15
2280	Gasifier Ash Sluice Water	0.033	.0014	<0.06	.020

As ppm: solids µg/g; liquids µg/ml.

TABLE D30. ICP RESULTS: GASIFIER ASH

Concentration in ppm weight (µg/g)

	Analysis #1	Analysis #2
Ag	<6.2	<6.2
Ca	48800	48100
Fe	30400	30100
Ni	71.	62.
V	38.	37.
Al	19100	18900
Cd	<6.2	<6.2
Mg	12300	12100
Pb	<87.	<87.
Zn	25.	4.6
As	<100	<100
Co	<190	<190
Mn	64.	64.
Sn	<50.	<50.
B	220	200
Cr	22.	20.
Mo	<50.	<50.
Sr	1300	1300
Ba	1900	1900
Cu	33.	47.
Na	<6300	<6200
Ti	1200	1200

Sample #2274

TABLE D31. ICP RESULTS: GASIFIER ASH SLUICE WATER

	Concentration in ppm (µg/ml)
Ag	<0.005
Ca	220.
Fe	1.2
Ni	<0.020
V	0.077
Al	11.
Cd	<0.005
Mg	11.
Pb	<0.07
Zn	0.044
As	<0.08
Co	<0.15
Mn	0.002
Sn	3.0
B	4.6
Cr	0.007
Mo	0.31
Sr	4.
Ba	0.13
Cu	0.017
Na	1700
Ti	0.044

Sample #2280

TABLE D32. ALPHA & BETA EMISSION ANALYSIS RESULTS: GASIFIER ASH

Determination	pCi/g ± Precision*
Gross Alpha	46 ± 11
Gross Beta	52 ± 15

Sample #2278

*Variability of the radioactive disintegration process (counting error) at the 95 percent confidence level, 1.96σ.

TABLE D33. SPECIFIC ISOTOPE ANALYSIS RESULTS: GASIFIER ASH

NUCLIDE	ACTIVITY pCi/g	PRECISION 2σ	COUNTING SYSTEM	SAMPLE SIZE
Po-210	0.496	0.108	AS02	1.000 g
Ra-226	5.500	0.110	LC	0.500 g
Pb-210	0.539	0.734	ABET	1.000 g
U-234	4.8600	0.5832	AS	1.000 g
U-235	0.284	0.05936	AS	1.000 g
U-238	4.9600	0.5952	AS	1.000 g
K-40	8.8600	1.1518	GEL2	410.0 g
Pb-214	4.330	0.866	GEL2	410.0 g
Bi-214	4.3500	0.9135	GEL2	410.0 g
Th-232	2.1100	0.3587	GEL2	410.0 g
Th-227	0.43100	0.08189	AS	1.000 g
Th-228	2.6400	0.1584	AS	1.000 g
Th-230	5.500	0.220	AS	1.000 g
Th-232	2.6100	0.1566	AS	1.000 g

Sample ashed prior to analysis except for Po-210, Pb-210, K-40, Pb-214, Bi-214, and Th-232.

Counting duration of 1000 minutes.

TABLE D34. PROXIMATE, ULTIMATE, AND MINERAL ANALYSIS RESULTS: GASIFIER ASH

PROXIMATE ANALYSIS	As received	Dry Basis
% Moisture	1.01	------
% Ash	73.66	74.41
% Volatile	6.49	6.56
% Fixed Carbon	18.84	19.03
	100.00	100.00
Btu	3709	3747
% Sulfur	1.08	1.09
% Alk. as Na_2O	N/A	N/A

ULTIMATE ANALYSIS	As received	Dry Basis
Moisture	1.01	------
Carbon	24.39	24.64
Hydrogen	0.41	0.41
Nitrogen	0.17	0.17
Chlorine	0.02	0.02
Sulfur	1.08	1.09
Ash	73.66	74.41
Oxygen (diff)	0.60	0.60
	100.00	100.00

MINERAL ANALYSIS	% Wt. Ignited Basis
Silica, SiO_2	39.18
Alumina, Al_2O_3	22.38
Titania, TiO_2	1.02
Ferric oxide, Fe_2O_3	13.40
Lime, CaO	9.02
Magnesia, MgO	2.89
Potassium oxide, K_2O	1.39
Sodium oxide, Na_2O	3.26
Sulfur Trioxide, SO_3	3.43
Phos. pentoxide, P_2O_5	0.61
Strontium oxide, SrO	0.31
Barium oxide, BaO	0.83
Manganese oxide, Mn_3O_4	0.04
Sum	97.76

Sample #2274

TABLE D35. ANION/CATION ANALYSIS RESULTS: GASIFIER ASH SLUICE WATER

Parameter	Concentration (ppm)
pH	9.3
TDS	4300
TSS	-
Sulfate	2860
Sulfite	47
Nitrate	3
Nitrite	<.01
Phosphate	<.1*
Cyanide	<.02
Ammonia	5.4
COD	76
BOD	28 - 64†
Phenol	.36
Chloride	78
Fluoride	.87
TOC	16

Sample #2280

* Possible interference

† Possible toxic effect

SAMPLE NUMBER	SAMPLE TYPE	SSMS	AAS	ICP	Radioactivity	Prox/ Ult	Anion/ Cation
2279	Cyclone Dust	•	•	•	•	•	
2281	Cyclone Dust Quench Water	•	•	•			•

Figure D5. Analysis Results Matrix: Cyclone Dust

TABLE D36. SSMS ANALYSIS RESULTS: CYCLONE DUST

Sample #2279

Concentration in ppm weight

ELEMENT	CONC.	ELEMENT	CONC.	ELEMENT	CONC.	ELEMENT	CONC.
Uranium	0.9	Terbium	0.1	Ruthenium		Vanadium	19
Thorium	2	Gadolinium	0.4	Molybdenum	2	Titanium	470
Bismuth	0.3	Europium	0.4	Niobium	5	Scandium	5
Lead	8	Samarium	2	Zirconium	29	Calcium	MC
Thallium	0.9	Neodymium	3	Yttrium	13	Potassium	MC
Mercury	NR	Praseodymium	2	Strontium	MC	Chlorine	75
Gold		Cerium	15	Rubidium	3	Sulfur	MC
Platinum		Lanthanum	8	Bromine	9	Phosphorus	MC
Iridium		Barium	MC	Selenium	5	Silicon	MC
Osmium		Cesium	0.7	Arsenic	46	Aluminum	MC
Rhenium		Iodine	0.4	Germanium	6	Magnesium	MC
Tungsten	$\leq$0.7	Tellurium	0.2	Gallium	33	Sodium	MC
Tantalum		Antimony	3	Zinc	160	Fluorine	$\approx$280
Hafnium		Tin	2	Copper	30	Oxygen	NR
Lutecium	<0.1	Indium	STD	Nickel	4	Nitrogen	NR
Ytterbium	0.6	Cadmium	2	Cobalt	5	Carbon	NR
Thulium	<0.1	Silver	2	Iron	MC	Boron	75
Erbium	0.3	Palladium		Manganese	20	Beryllium	0.4
Holmium	0.4	Rhodium		Chromium	11	Lithium	6
Dysprosium	0.6					Hydrogen	NR

STD - Internal Standard
NR - Not Reported
All elements not detected <0.1 ppm
MC - Major Component
INT - Interference

TABLE D37. SSMS ANALYSIS RESULTS: CYCLONE DUST QUENCH WATER

Sample #2281

Concentration in µg/ml

ELEMENT	CONC.	ELEMENT	CONC.	ELEMENT	CONC.	ELEMENT	CONC.
Uranium		Terbium		Ruthenium		Vanadium	0.02
Thorium		Gadolinium		Molybdenum	≤0.004	Titanium	0.06
Bismuth		Europium		Niobium		Scandium	≤0.001
Lead	0.02	Samarium		Zirconium	0.005	Calcium	MC
Thallium		Neodymium		Yttrium	0.002	Potassium	MC
Mercury	NR	Praseodymium		Strontium	2	Chlorine	0.3
Gold		Cerium	0.002	Rubidium	0.02	Sulfur	>7
Platinum		Lanthanum		Bromine	0.04	Phosphorus	0.4
Iridium		Barium	0.002	Selenium	0.006	Silicon	2
Osmium		Cesium	0.004	Arsenic	*0.05	Aluminum	>1
Rhenium		Iodine	0.006	Germanium	0.007	Magnesium	1
Tungsten		Tellurium		Gallium	*0.02	Sodium	>3
Tantalum		Antimony		Zinc	0.06	Fluorine	≈2
Hafnium		Tin		Copper	0.02	Oxygen	NR
Lutecium		Indium	STD	Nickel	0.08	Nitrogen	NR
Ytterbium		Cadmium		Cobalt	0.009	Carbon	NR
Thulium		Silver	0.002	Iron	2	Boron	0.09
Erbium		Palladium		Manganese	0.005	Beryllium	<0.001
Holmium		Rhodium		Chromium	0.01	Lithium	0.04
Dysprosium						Hydrogen	NR

STD - Internal Standard
NR - Not Reported
All elements not detected <0.001 µg/ml
MC - Major Component MC >10 µg/ml

INT - Interference
*Heterogeneous

TABLE D38. VOLATILE METALS BY AAS: CYCLONE DUST

SAMPLE NUMBER	SAMPLE TYPE	As	Hg	Sb	Se
2279	Cyclone Dust	63	<2.3	<.4	14
2281	Cyclone Dust Quench Water	0.12	.0004	<.06	<.025

As ppm: solids µg/g; liquids µg/ml.

TABLE D39. ICP RESULTS: CYCLONE DUST

Concentration in ppm (μg/g)

	Analysis #1	Analysis #2
Ag	<6.2	<6.2
Ca	11300	13600
Fe	7900	7600
Ni	<25.	<25.
V	<12.	<13.
Al	7200	7000
Cd	<6.2	<6.2
Mg	12300	12100
Pb	<86.	<87.
Zn	15.	34.
As	<100	<100
Co	<190	<190
Mn	23.	14.
Sn	<19.	<50.
B	118	110
Cr	<6.2	<6.2
Mo	<49.	<50.
Sr	1180	1170
Ba	2300	2300
Cu	<6.2	<6.2
Na	6200	6200
Ti	317	300

Sample #2279

TABLE D40. ICP RESULTS: CYCLONE DUST QUENCH WATER

	Concentration in µg/ml (ppm)
Ag	<0.005
Ca	54.
Fe	4.9
Ni	<0.02
V	0.015
Al	11.
Cd	<0.005
Mg	11.
Pb	0.099
Zn	0.035
As	<0.08
Co	<0.15
Mn	<0.001
Sn	2.9
B	0.99
Cr	<0.005
Mo	<0.04
Sr	1.1
Ba	0.57
Cu	0.012
Na	220
Ti	0.18

Sample #2281

TABLE D41. ALPHA AND BETA EMISSION ANALYSIS RESULTS: CYCLONE DUST

Determination	pCi/g ± Precision*
Gross Alpha	11.1 ± 6.1
Gross Beta	0 ± 15

Sample #2279

*Variability of the radioactive disintegration process (counting error) at the 95% confidence level, 1.96σ.

TABLE D42. SPECIFIC ISOTOPE ANALYSIS RESULTS: CYCLONE DUST

NUCLIDE	ACTIVITY pCi/g	PRECISION 2σ	COUNTING SYSTEM	SAMPLE SIZE
Po-210	2.500	0.585	AS03	1.00 g
Ra-226	2.000	0.080	LC	0.500 g
Pb-210	1.392	1.283	ABET	1.000 g
U-234	0.675	0.10125	AS	1.000 g
U-235	0.388	0.20564	AS	1.000 g
U-238	0.731	0.10965	AS	1.000 g
Th-227	ND	ND	AS	1.000 g
Th-228	0.528	0.12672	AS	1.000 g
Th-230	0.639	0.14697	AS	1.000 g
Th-232	0.417	0.10842	AS	1.000 g

Sample ashed prior to analysis for U-234, U-235, and U-238.
Counting duration of 1000 minutes.

TABLE D43. PROXIMATE, ULTIMATE, AND MINERAL ANALYSIS RESULTS: CYCLONE DUST

PROXIMATE ANALYSIS	As received	Dry Basis
% Moisture	0.44	------
% Ash	18.89	18.97
% Volatile	24.30	24.41
% Fixed Carbon	56.37	56.62
	100.00	100.00
Btu	10670	10717
% Sulfur	1.50	1.51
% Alk. as Na_2O	N/A	N/A

ULTIMATE ANALYSIS	As received	Dry Basis
Moisture	0.44	------
Carbon	66.88	67.18
Hydrogen	2.31	2.32
Nitrogen	0.93	0.93
Chlorine	0.03	0.03
Sulfur	1.50	1.51
Ash	18.89	18.97
Oxygen (diff)	9.02	9.06
	100.00	100.00

MINERAL ANALYSIS	% Wt. Ignited Basis
Silica, SiO_2	20.71
Alumina, Al_2O_3	12.21
Titania, TiO_2	0.35
Ferric oxide, Fe_2O_3	6.95
Lime, CaO	21.55
Magnesia, MgO	6.82
Potassium oxide, K_2O	0.81
Sodium oxide, Na_2O	7.83
Sulfur Trioxide, SO_3	17.02
Phos. pentoxide, P_2O_5	0.70
Strontium oxide, SrO	0.85
Barium oxide, BaO	2.01
Manganese oxide, Mn_3O_4	0.01
Sum	97.82

Sample #2279

TABLE D44. ANION/CATION ANALYSIS RESULTS: CYCLONE DUST QUENCH WATER

Parameter	Concentration (ppm)
pH	10.0
TDS	390
TSS	-
Sulfate	55
Sulfite	12
Nitrate	<.5*
Nitrite	<.01
Phosphate	<.1*
Cyanide	.36
Ammonia	.97
COD	800
BOD	62 - 85†
Phenol	9.8
Chloride	34
Fluoride	2.0
TOC	185

Sample # 2281

* Possible interference

† Possible toxic effects

SAMPLE NUMBER	SAMPLE TYPE	SSMS	AAS	ICP	Radioactivity	Prox/ Ult	Anion/ Cation
2272	Lignite Composite	•	•		•	•	
2266	Lignite					•	
2267	Lignite					•	
2268	Lignite					•	
2269	Lignite					•	
2270	Lignite					•	
2271	Lignite					•	

Figure D6. Analysis Results Matrix: Lignite Composite

TABLE D45. SSMS ANALYSIS RESULTS: LIGNITE COMPOSITE

Sample #2272

Concentration in ppm weight

ELEMENT	CONC.	ELEMENT	CONC.	ELEMENT	CONC.	ELEMENT	CONC.
Uranium	≤0.9	Terbium	0.1	Ruthenium		Vanadium	22
Thorium	≤1	Gadolinium	0.4	Molybdenum	1	Titanium	350
Bismuth		Europium	0.2	Niobium	2	Scandium	5
Lead	2	Samarium	1	Zirconium	17	Calcium	MC
Thallium		Neodymium	1	Yttrium	4	Potassium	MC
Mercury	NR	Praseodymium	0.7	Strontium	280	Chlorine	15
Gold		Cerium	8	Rubidium	9	Sulfur	MC
Platinum		Lanthanum	6	Bromine	1	Phosphorus	910
Iridium		Barium	630	Selenium	0.7	Silicon	MC
Osmium		Cesium	0.9	Arsenic	12	Aluminum	MC
Rhenium		Iodine	0.2	Germanium	0.7	Magnesium	MC
Tungsten		Tellurium		Gallium	*19	Sodium	MC
Tantalum		Antimony	0.2	Zinc	3	Fluorine	≈ 210
Hafnium		Tin	0.5	Copper	8	Oxygen	NR
Lutecium		Indium	STD	Nickel	5	Nitrogen	NR
Ytterbium		Cadmium	0.4	Cobalt	2	Carbon	NR
Thulium		Silver	1	Iron	MC	Boron	25
Erbium		Palladium		Manganese	13	Beryllium	0.4
Holmium		Rhodium		Chromium	10	Lithium	5
Dysprosium						Hydrogen	NR

STD - Internal Standard
NR - Not Reported
MC - Major Component MC >1000 ppm
INT - Interference
All elements not detected <0.1 ppm
*Heterogeneous

TABLE D46. VOLATILE METALS BY AAS: LIGNITE COMPOSITE

SAMPLE NUMBER	SAMPLE TYPE	As	Hg	Sb	Se
2272	Lignite	6.5	.39	<.06	1.0

As ppm: solids µg/g

TABLE D47. ALPHA AND BETA EMISSION ANALYSIS RESULTS: LIGNITE COMPOSITE

Determination	pCi/g ± Precision*
Gross Alpha	1.7 ± 3.6
Gross Beta	0 ± 13

Sample #2273

*Variability of the radioactive disintegration process (counting error) at the 95% confidence level, 1.96σ.

TABLE D48. SPECIFIC ISOTOPE ANALYSIS RESULTS: LIGNITE COMPOSITE

NUCLIDE	ACTIVITY pCi/g	PRECISION 2σ	COUNTING SYSTEM	SAMPLE SIZE
Po-210	0.627	0.146	AS07	1.000 g
Ra-226	0.280	0.008	LC	0.500 g
Pb-210	0.984	0.441	ABET	1.000 g
U-234	0.211	0.0295	AS	1.000 g
U-235	0.014	0.0029	AS	1.000 g
U-238	0.205	1.000	AS	1.000 g
Th-227	0.041	0.00779	AS	1.000 g
Th-228	0.134	0.01072	AS	1.000 g
Th-230	0.186	0.01488	AS	1.000 g
Th-232	0.126	0.01008	AS	1.000 g

Sample ashed prior to analysis except for Po-210 and Pb-210 determinations.

Counting duration of 1000 minutes.

TABLE D49. PROXIMATE, ULTIMATE, AND MINERAL ANALYSIS RESULTS: LIGNITE COMPOSITE

PROXIMATE ANALYSIS	As received	Dry Basis
% Moisture	4.19	------
% Ash	10.45	10.91
% Volatile	40.17	41.93
% Fixed Carbon	45.19	47.16
	100.00	100.00
Btu	10036	10475
% Sulfur	0.58	0.61
% Alk. as Na_2O	N/A	N/A

ULTIMATE ANALYSIS	As received	Dry Basis
Moisture	4.19	------
Carbon	60.06	62.69
Hydrogen	4.41	4.60
Nitrogen	0.87	0.91
Chlorine	0.03	0.03
Sulfur	0.58	0.61
Ash	10.45	10.91
Oxygen (diff)	19.41	20.25
	100.00	100.00

MINERAL ANALYSIS	% Wt. Ignited Basis
Silica, SiO_2	30.21
Alumina, Al_2O_3	14.93
Titania, TiO_2	0.46
Ferric oxide, Fe_2O_3	6.36
Lime, CaO	16.39
Magnesia, MgO	6.46
Potassium oxide, K_2O	1.49
Sodium oxide, Na_2O	9.00
Sulfur Trioxide, SO_3	10.93
Phos. pentoxide, P_2O_5	0.63
Strontium oxide, SrO	0.72
Barium oxide, BaO	1.32
Manganese oxide, Mn_3O_4	0.01
Sum	98.91

Sample #2272

TABLE D50. PROXIMATE, ULTIMATE, AND MINERAL ANALYSIS RESULTS: LIGNITE FS-9

PROXIMATE ANALYSIS	As Received	Dry Basis
% Moisture	6.82	-----
% Ash	6.29	6.75
% Volatile	41.18	44.19
% Fixed Carbon	45.71	49.06
	100.00	100.00
Btu	10090	10829
% Sulfur	0.39	0.42

	% Weight	
ULTIMATE ANALYSIS	As Received	Dry Basis
Moisture	6.82	-----
Carbon	60.59	65.02
Hydrogen	4.20	4.51
Nitrogen	0.85	0.91
Chlorine	0.03	0.03
Sulfur	0.39	0.42
Ash	6.29	6.75
Oxygen (diff)	20.83	22.36
	100.00	100.00

Sample #2266.

TABLE D51. PROXIMATE, ULTIMATE, AND MINERAL ANALYSIS RESULTS: LIGNITE FS-11

PROXIMATE ANALYSIS	As Received	Dry Basis
% Moisture	7.79	-----
% Ash	6.20	6.72
% Volatile	41.15	44.63
% Fixed Carbon	44.86	48.65
	100.00	100.00
Btu	10071	10922
% Sulfur	0.44	0.48

	% Weight	
ULTIMATE ANALYSIS	As Received	Dry Basis
Moisture	7.79	-----
Carbon	60.07	65.14
Hydrogen	4.44	4.82
Nitrogen	0.81	0.88
Chlorine	0.02	0.02
Sulfur	0.44	0.48
Ash	6.20	6.72
Oxygen (diff)	20.23	21.94
	100.00	100.00

Sample #2267.

TABLE D52. PROXIMATE, ULTIMATE, AND MINERAL ANALYSIS RESULTS: LIGNITE FS-21

PROXIMATE ANALYSIS	As Received	Dry Basis
% Moisture	3.79	-----
% Ash	6.54	6.80
% Volatile	42.56	44.24
% Fixed Carbon	47.11	48.96
	100.00	100.00
Btu	10663	11083
% Sulfur	0.44	0.46

	% Weight	
ULTIMATE ANALYSIS	As Received	Dry Basis
Moisture	3.79	-----
Carbon	63.10	65.59
Hydrogen	4.73	4.92
Nitrogen	0.90	0.94
Chlorine	0.03	0.03
Sulfur	0.44	0.46
Ash	6.54	6.80
Oxygen (diff)	20.47	21.26
	100.00	100.00

Sample #2268.

TABLE D53. PROXIMATE AND ULTIMATE ANALYSIS RESULTS: LIGNITE FS-24

PROXIMATE ANALYSIS	As Received	Dry Basis
% Moisture	2.06	-----
% Ash	6.83	6.97
% Volatile	44.65	45.59
% Fixed Carbon	46.46	47.44
	100.00	100.00
Btu	10828	11056
% Sulfur	0.57	0.58

	% Weight	
ULTIMATE ANALYSIS	As Received	Dry Basis
Moisture	2.06	-----
Carbon	64.00	65.35
Hydrogen	4.31	4.40
Nitrogen	0.87	0.89
Chlorine	0.84	0.04
Sulfur	0.57	0.58
Ash	6.83	6.97
Oxygen (diff)	21.32	21.77
	100.00	100.00

Sample #2269.

TABLE D54. PROXIMATE, ULTIMATE, AND MINERAL ANALYSIS RESULTS: LIGNITE FS-50

PROXIMATE ANALYSIS*	As Received	Dry Basis
% Moisture	1.83	-----
% Ash	17.50	17.83
% Volatile	39.89	40.63
% Fixed Carbon	40.78	41.54
	100.00	100.00
Btu	9744	9926
% Sulfur	7.12	7.25

	% Weight	
ULTIMATE ANALYSIS	As Received	Dry Basis
Moisture	1.83	-----
Carbon	55.79	56.83
Hydrogen	3.62	3.69
Nitrogen	0.81	0.83
Chlorine	0.02	0.02
Sulfur	7.12	7.25
Ash	17.50	17.83
Oxygen (diff)	13.31	13.55
	100.00	100.00

Sample #2270

*Duplicate analysis results (2-8-1980)

	As Received	Dry Basis
% Moisture	6.81	-----
% Ash	14.52	15.58
% Volatile	38.00	40.78
% Fixed Carbon	40.67	43.64
	100.00	100.00
Btu	9242	9917
% Sulfur	4.87	5.23

TABLE D55. PROXIMATE, ULTIMATE, AND MINERAL ANALYSIS RESULTS: LIGNITE FS-72

PROXIMATE ANALYSIS	As Received	Dry Basis
% Moisture	2.08	-----
% Ash	10.93	11.16
% Volatile	45.06	46.02
% Fixed Carbon	41.93	42.82
	100.00	100.00
Btu	10143	10358
% Sulfur	0.51	0.52

	% Weight	
ULTIMATE ANALYSIS	As Received	Dry Basis
Moisture	2.08	-----
Carbon	60.92	62.21
Hydrogen	4.50	4.60
Nitrogen	0.79	0.81
Chlorine	0.04	0.04
Sulfur	0.51	0.52
Ash	10.93	11.16
Oxygen (diff)	20.23	20.66
	100.00	100.00

Sample #2271

SAMPLE NUMBER	SAMPLE TYPE	SSMS	AAS	ICP	Radioactivity	Prox/ Ult	Anion/ Cation
2282	Service Water	•					

Figure D7. Analysis Results Matrix: Service Water

TABLE D56. SSMS ANALYSIS RESULTS: SERVICE WATER

Sample #2282

Concentration in µg/ml

ELEMENT	CONC.	ELEMENT	CONC.	ELEMENT	CONC.	ELEMENT	CONC.
Uranium		Terbium		Ruthenium		Vanadium	0.002
Thorium		Gadolinium		Molybdenum		Titanium	≤0.06
Bismuth		Europium		Niobium		Scandium	≤0.002
Lead		Samarium		Zirconium	≤0.004	Calcium	MC
Thallium		Neodymium		Yttrium		Potassium	7
Mercury	NR	Praseodymium		Strontium	0.04	Chlorine	0.2
Gold		Cerium	0.004	Rubidium	0.002	Sulfur	3
Platinum		Lanthanum		Bromine	0.02	Phosphorus	0.05
Iridium		Barium	0.03	Selenium		Silicon	0.9
Osmium		Cesium	0.002	Arsenic	≤0.001	Aluminum	0.1
Rhenium		Iodine		Germanium		Magnesium	5
Tungsten		Tellurium		Gallium		Sodium	7
Tantalum		Antimony		Zinc	0.04	Fluorine	≈0.4
Hafnium		Tin		Copper	0.01	Oxygen	NR
Lutecium		Indium	STD	Nickel	0.02	Nitrogen	NR
Ytterbium		Cadmium		Cobalt	≤0.004	Carbon	NR
Thulium		Silver	≤0.003	Iron	0.3	Boron	0.01
Erbium		Palladium		Manganese	0.006	Beryllium	
Holmium		Rhodium		Chromium	0.01	Lithium	0.01
Dysprosium						Hydrogen	NR

STD - Internal Standard
NR - Not Reported
All elements not detected <0.002 µg/ml
MC - Major Component MC >10 µg/ml
INT - Interference

SAMPLE NUMBER	SAMPLE TYPE	SSMS	AAS	ICP	Radioactivity	Prox/ Ult	Anion/ Cation
2352	Gasifier Ash Leachate	•	•				•
2353	Cyclone Dust Leachate	•	•				•
2354	Leachate Blank	•	•				•

Figure D8. Analysis Results Matrix: Leachates

TABLE D57. SSMS ANALYSIS RESULTS: GASIFIER ASH LEACHATE

Sample #2352

Concentration in µg/ml

ELEMENT	CONC.	ELEMENT	CONC.	ELEMENT	CONC.	ELEMENT	CONC.
Uranium	≤0.006	Terbium		Ruthenium		Vanadium	0.007
Thorium	≤0.008	Gadolinium		Molybdenum	0.01	Titanium	0.1
Bismuth		Europium		Niobium		Scandium	≤0.001
Lead	0.007	Samarium		Zirconium	0.005	Calcium	MC
Thallium		Neodymium		Yttrium	0.007	Potassium	MC
Mercury	NR	Praseodymium		Strontium	6	Chlorine	0.05
Gold		Cerium	0.004	Rubidium	0.02	Sulfur	6
Platinum		Lanthanum	0.004	Bromine	0.004	Phosphorus	0.07
Iridium		Barium	1	Selenium	0.005	Silicon	MC
Osmium		Cesium	0.001	Arsenic	0.005	Aluminum	0.1
Rhenium		Iodine		Germanium	0.002	Magnesium	MC
Tungsten		Tellurium		Gallium	<0.001	Sodium	2
Tantalum		Antimony		Zinc	0.1	Fluorine	≈3
Hafnium		Tin		Copper	0.1	Oxygen	NR
Lutecium		Indium	STD	Nickel	0.04	Nitrogen	NR
Ytterbium		Cadmium	≤0.007	Cobalt	0.007	Carbon	NR
Thulium		Silver		Iron	*2	Boron	0.08
Erbium		Palladium		Manganese	0.5	Beryllium	
Holmium		Rhodium		Chromium	0.001	Lithium	0.006
Dysprosium						Hydrogen	NR

STD - Internal Standard
NR - Not Reported
All elements not detected <0.001 µg/ml

MC - Major Component MC >10 µg/ml
INT - Interference
*Heterogeneous

TABLE D58. SSMS ANALYSIS RESULTS: CYCLONE DUST LEACHATE

Sample #2353 Concentration in µg/ml

ELEMENT	CONC.	ELEMENT	CONC.	ELEMENT	CONC.	ELEMENT	CONC.
Uranium	≤0.01	Terbium		Ruthenium		Vanadium	<0.001
Thorium	≤0.01	Gadolinium		Molybdenum	0.002	Titanium	0.05
Bismuth		Europium		Niobium		Scandium	≤0.001
Lead	0.008	Samarium		Zirconium	0.03	Calcium	MC
Thallium		Neodymium		Yttrium	0.003	Potassium	MC
Mercury	NR	Praseodymium		Strontium	7	Chlorine	0.1
Gold		Cerium	0.001	Rubidium	0.02	Sulfur	>6
Platinum		Lanthanum		Bromine	≤0.02	Phosphorus	0.4
Iridium		Barium	1	Selenium	0.006	Silicon	MC
Osmium		Cesium	0.004	Arsenic	0.02	Aluminum	>1
Rhenium		Iodine		Germanium	0.002	Magnesium	MC
Tungsten		Tellurium		Gallium	<0.001	Sodium	>3
Tantalum		Antimony	0.008	Zinc	0.07	Fluorine	≈4
Hafnium		Tin	0.002	Copper	0.006	Oxygen	NR
Lutecium		Indium	STD	Nickel	0.01	Nitrogen	NR
Ytterbium		Cadmium		Cobalt	0.002	Carbon	NR
Thulium		Silver		Iron	0.6	Boron	0.1
Erbium		Palladium		Manganese	0.1	Beryllium	
Holmium		Rhodium		Chromium	0.001	Lithium	0.04
Dysprosium						Hydrogen	NR

STD - Internal Standard
NR - Not Reported
All elements not detected <0.001 µg/ml
MC - Major Component MC >10 µg/ml
INT - Interference

TABLE D59. SSMS ANALYSIS RESULTS: LEACHATE BLANK

Sample #2354 Concentration in µg/ml

ELEMENT	CONC.	ELEMENT	CONC.	ELEMENT	CONC.	ELEMENT	CONC.
Uranium	≤0.02	Terbium		Ruthenium		Vanadium	<0.001
Thorium	≤0.02	Gadolinium		Molybdenum		Titanium	0.01
Bismuth		Europium		Niobium		Scandium	<0.001
Lead	0.01	Samarium		Zirconium		Calcium	0.6
Thallium		Neodymium		Yttrium		Potassium	*0.7
Mercury	NR	Praseodymium		Strontium	0.02	Chlorine	0.06
Gold		Cerium		Rubidium		Sulfur	0.08
Platinum		Lanthanum		Bromine		Phosphorus	0.02
Iridium		Barium	0.2	Selenium		Silicon	0.08
Osmium		Cesium		Arsenic		Aluminum	*0.03
Rhenium		Iodine		Germanium		Magnesium	MC
Tungsten		Tellurium		Gallium		Sodium	*0.3
Tantalum		Antimony		Zinc	0.04	Fluorine	=0.04
Hafnium		Tin		Copper	0.008	Oxygen	NR
Lutecium		Indium	STD	Nickel	0.007	Nitrogen	NR
Ytterbium		Cadmium		Cobalt	<0.001	Carbon	NR
Thulium		Silver		Iron	0.06	Boron	
Erbium		Palladium		Manganese	0.003	Beryllium	
Holmium		Rhodium		Chromium	0.001	Lithium	
Dysprosium						Hydrogen	NR

STD - Internal Standard
NR - Not Reported
All elements not detected <0.002 µg/ml

MC - Major Component MC >10 µg/ml
INT - Interference
*Heterogeneous

TABLE D60. VOLATILE METALS BY AAS: LEACHATES

SAMPLE NUMBER	SAMPLE TYPE	As	Hg	Sb	Se
2352	Gasifier Ash Leachate	.019	<.0006	<.06	.014
2353	Cyclone Dust Leachate	.033	<.0003	<.06	<.01
2354	Leachate Blank	<.005	<.0002	<.06	.012

As ppm: µg/ml.

TABLE D61. ANION/CATION ANALYSIS RESULTS: GASIFIER ASH LEACHATE

Parameter	Concentration (ppm)
pH	4.13
TDS	2131
TSS	36.1
Sulfite	<10
Nitrate	<.25
Nitrite	<.01
Phosphate	.1
Cyanide	<.02
Ammonia	<.007
COD	1710
BOD	2970
Phenol	.002

Sample #2352

TABLE D62. ANION/CATION ANALYSIS RESULTS: CYCLONE DUST LEACHATE

Parameter	Concentration (ppm)
pH	4.04
TDS	2281
TSS	16.7
Sulfite	<10
Nitrate	<.25
Nitrite	<.01
Phosphate	.2
Cyanide	.05
Ammonia	1.8
COD	1410
BOD	3150
Phenol	.038

Sample #2353

TABLE D63. ANION/CATION ANALYSIS RESULTS: LEACHATE BLANK

Parameter	Concentration (ppm)
pH	2.01
TDS	15
TSS	3
Sulfite	<10
Nitrate	<.25
Nitrite	<.01
Phosphate	.1
Cyanide	<.02
Ammonia	<.007
COD	1430
BOD	2661
Phenol	<.002
TOC	1.3

Sample #2354

TABLE D64. IRON AND NICKEL CARBONYL ANALYSIS RESULTS: COAL BIN VENT GAS

CARBONYL	SCM* SAMPLED	TOTAL µg	Vppm
$Fe(CO)_5$	1.533	50	.033
$Ni(CO)_4$	1.533	<.2	<.001

*SCM at 25°C (77°F) and 101 kPa (1 atm), dry basis.

D3.0 ORGANIC SCREENING ANALYSIS RESULTS

The screening analyses were accomplished using the methods described in Appendix C of this document. The analytical results are presented in the following tables by stream:

- Product Gas
  - product gas particulates
  - product gas organic module composite
- Test Burner Flue Gas
- Gasifier Ash
  - gasifier ash
  - gasifier ash sluice water
- Cyclone Dust
  - cyclone dust
  - cyclone dust quench water

An analytical flow diagram of the sample compositing and the screening analysis steps preceeds each sample results section. Each sample results section contains the LC fractionation and infrared analysis results. The gasifier ash sluice water and cyclone dust quench water flow rates were not well known for the on-site sampling periods, and the cyclone dust quench wtaer was allowed to remain the contact with the cyclone dust for an extended period of time. Therefore, fractionation of these non-representative samples was not undertaken. The IR of each aqueous sample is compared with the IR of the corresponding solid and the total extractable organic content is given on the analytical flow diagram for each aqueous sample.

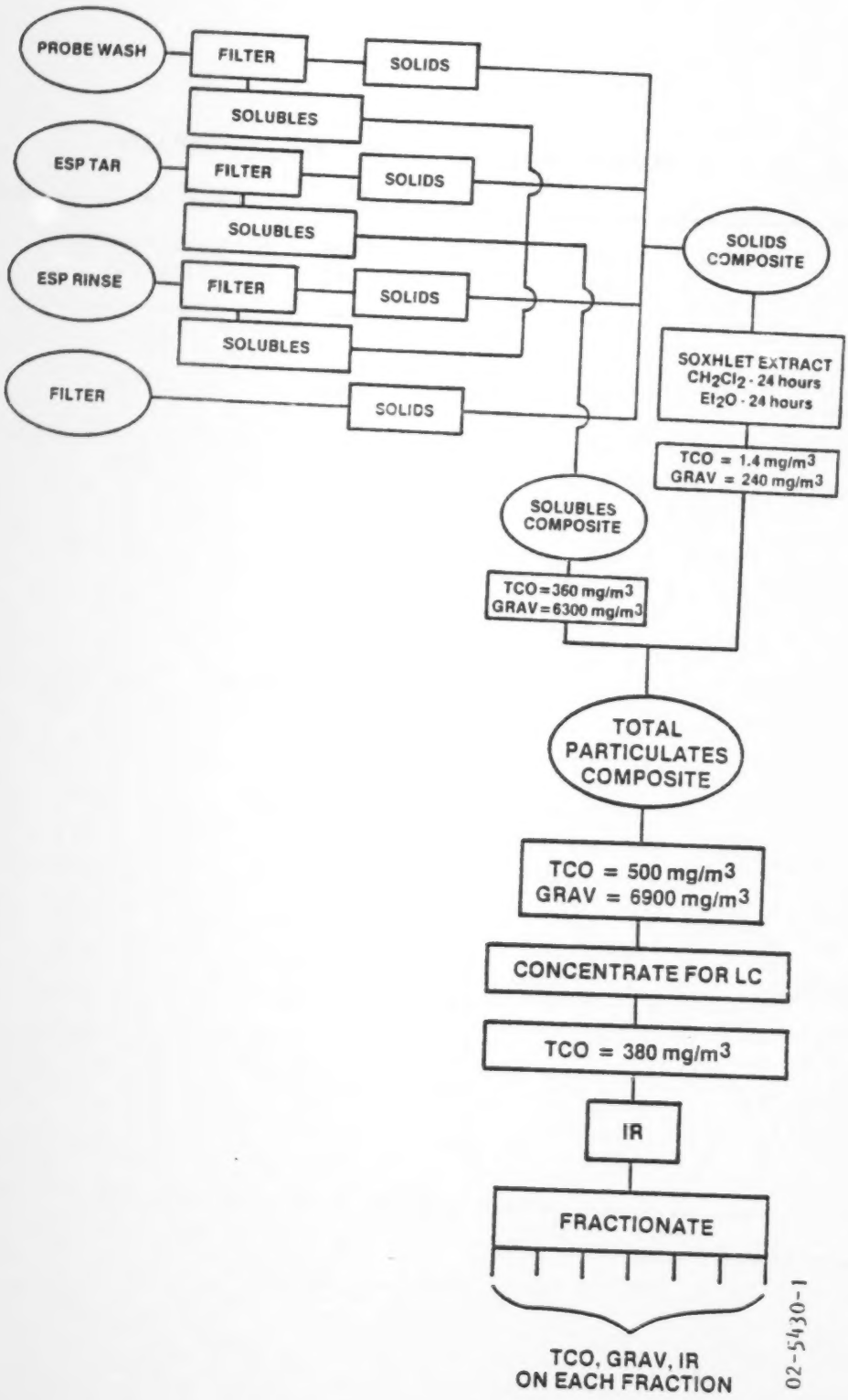

Figure D9. Product Gas Particulate Screening Analysis Schematic

TABLE D65 . LC ANALYSIS RESULTS: PRODUCT GAS PARTICULATES

	TCO mg	GRAV mg	TOTAL mg	CONCENTRATION mg/SCM
Total Sample	3200	5900	6200	7300
Taken for LC	5.3	97.6	102.9	
Recovered	3.3	90.0	93.3	6500

	TCO mg	GRAV mg	SAMPLE TOTAL mg	CONCENTRATION mg/SCM
LC 1	0.26	12.2	7400	870
LC 2	ND	1.3	760	89
LC 3	0.17	9.6	5800	680
LC 4	ND	5.9	3500	410
LC 5	0.16	6.9	4200	490
LC 6	2.74	49.6	31000	3600
LC 7	ND	4.5	2600	300
% Recovery	62%	92%	89%	

ND - Less than 0.01 mg total TCO.

SCM at 25°C (77°F) and 101 kPa (1 atm), dry basis.

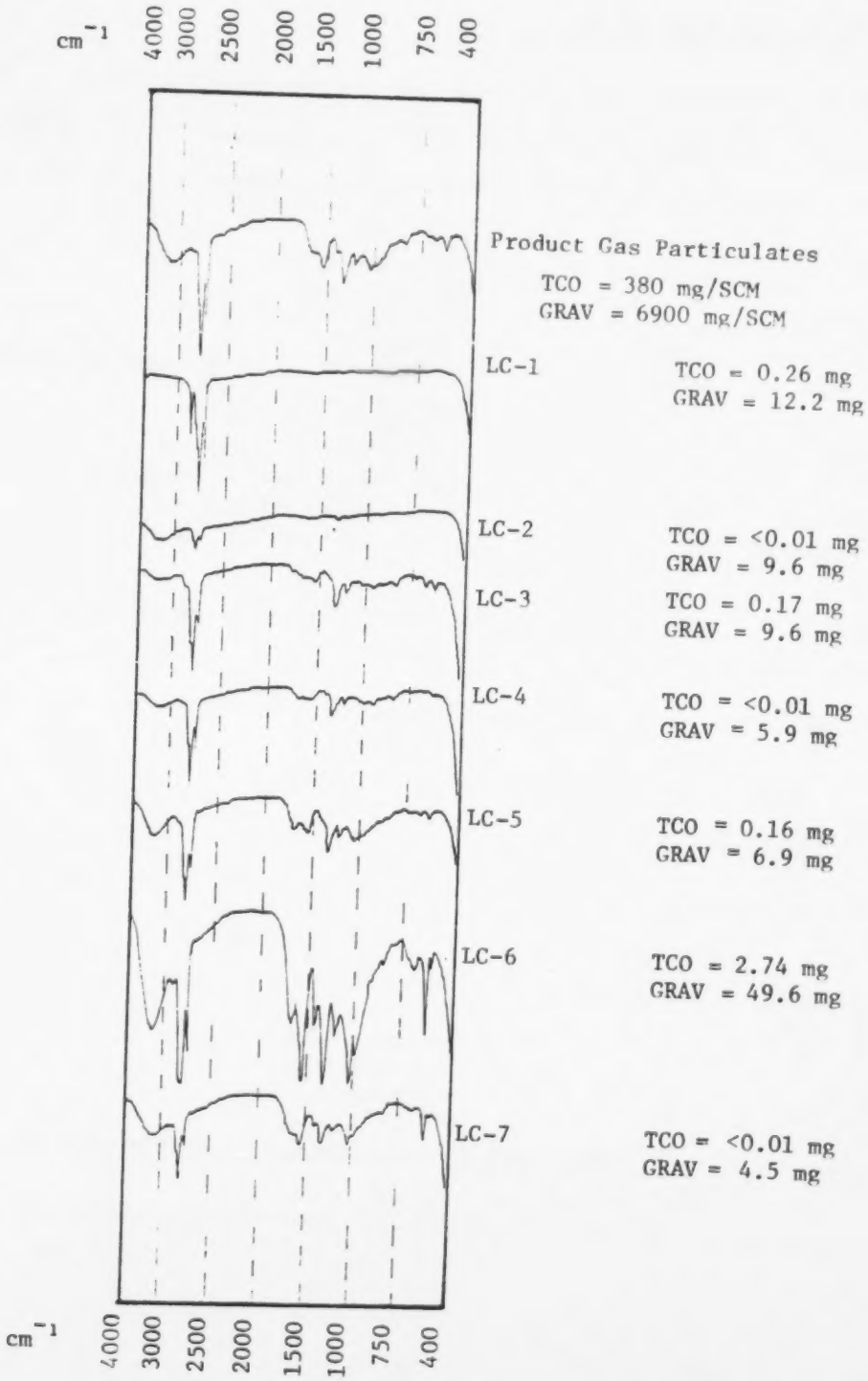

Figure D10. Infrared Spectra, Product Gas Particulates

TABLE D66. INFRARED ANALYSIS: PRODUCT GAS PARTICULATE

IR REPORT

Sample: PRODUCT GAS PARTICULATE

WAVE NUMBER (cm^{-1})	INTENSITY	ASSIGNMENT
3350	M	-OH, -NH
3050	W	Aromatic CH
2960, 2920	S	Aliphatic CH
2850	S	Aliphatic CH
1680	M Br	Carbonyls
1600	M	Aromatic ring, COOH, amides, amines
1510	W	Aromatic ring, C-N
1460	S	Aliphatic CH, C-O
1380	M	Aliphatic CH, C-O, C-N
1270	M Br	C-O, C-N, Aromatic overtones
1020	W	Aromatic overtones, C-O
740	W	Aromatic substitution, C-N, C-Cl

Comments: Contains aromatic and oxygenated material as well as nitrogenous species.

IR REPORT

Sample: PRODUCT GAS PARTICULATE LC 1

WAVE NUMBER (cm^{-1})	INTENSITY	ASSIGNMENT
3050	S	Aromatic CH
2920	S	Aliphatic CH
2850	S	Aliphatic CH

Comments: Aliphatic hydrocarbons, some non-substituted aromatics possible.

TABLE D66. CONTINUED

IR REPORT

Sample: PRODUCT GAS PARTICULATE LC2

WAVE NUMBER (cm^{-1})	INTENSITY	ASSIGNMENT
3400	S	-OH, -NH
2950, 2920	S	Aliphatic CH
2850	S	Aliphatic CH
1450	M	Aliphatic CH, C-O, C-N

Comments: Appears to be primarily aliphatic. Very weak spectrum.

IR REPORT

Sample: PRODUCT GAS PARTICULATE LC3

WAVE NUMBER (cm^{-1})	INTENSITY	ASSIGNMENT
3400	W	-OH, -NH
3050	W	Aromatic CH
2960, 2930	S	Aliphatic CH
2860	S	Aliphatic CH
1730	W	Carbonyls
1690	W Br	Esters, aldehydes, amides
1600	W	Aromatic ring stretch, C-N
1460	M	Aliphatic CH
1380	M	Aliphatic CH, C-O, amides
1270	W	C-O amides, aromatic, amines
1190	W	Aromatic overtones, esters, C-O, C-N
1020	W	Aromatic overtones C-O
880	W	Aliphatic CH, aromatic substitution, C-S, amines
815	W	Aliphatic CH, aromatic substitution, C-S
750	W	Aliphatic CH, aromatic substitution, C-Cl

Comments: Aromatics and aliphatics present. Considerable indications of substitution, oxygenated.

TABLE D66. CONTINUED

IR REPORT

Sample: PRODUCT GAS PARTICULATE LC 4

WAVE NUMBER (cm^{-1})	INTENSITY	ASSIGNMENT
3400	W	-OH, -NH
2960, 2920	S	Aliphatic CH
2850	S	Aliphatic CH
1700	W Br	Carbonyls
1600	W Br	Aromatic ring stretch, C-N
1460	M	Aliphatic CH
1380	W	Aliphatic CH, C-O amides, C-S
1240	W Br	C-O, amines
1160	W Br	Aromatic overtones, esters, C-N
1020	W	Aromatic overtones, C-O
740, 720	W	Aromatic substitution, C-N, C-Cl

Comments: Possibly weak aromatic, heterocyclic - O and -N probable. Similar to LC3 and LC5.

IR REPORT

Sample: PRODUCT GAS PARTICULATE LC 5

WAVE NUMBER (cm^{-1})	INTENSITY	ASSIGNMENT
3400	M	-OH, -NH
3050	W	Aromatic CH
2960, 2920	S	Aliphatic CH
2850	S	Aliphatic CH
1700	M	Carbonyls
1600	M	Aromatic ring stretch, C-N
1460	S	Aliphatic CH, alcohols
1380	M	Aliphatic CH, alcohols, aldehydes, amides
1270	M	Aromatic C-O esters, C-N
890	W	Aromatic substitution, C-N, C-S
820	W	Aromatic substitution, C-N, C-S
750	W	Aromatic substitution, C-N, C-Cl

Comments: Contains aromatic material, strong indication of heterocyclics and oxygenated material.

TABLE 66. CONTINUED

IR REPORT

Sample: PRODUCT GAS PARTICULATE LC 6

WAVE NUMBER (cm^{-1})	INTENSITY	ASSIGNMENT
3400	S	-OH, -NH
3050	W	Aromatic CH
2950	S	Aliphatic CH
2850	S	Aliphatic CH
1680	M	Carbonyls
1610	S	Aromatic ring stretch, C-N
1520	W	Aromatic ring stretch
1460	S	Aliphatic CH, primary alcohols
1380	M	Aliphatic CH, alcohols, amides, aldehydes
1270	S	Aromatic C-O, esters, C-N
1040	W	Aromatic overtones C-O
810	W	Aromatic substitution, C-N
740	M	Aromatic substitution, C-N
700	W	Aromatic substitution, C-Cl

Comments: Aromatics, amines and possibly carboxylic acids.

IR REPORT

Sample: PRODUCT GAS PARTICULATE LC 7

WAVE NUMBER (cm^{-1})	INTENSITY	ASSIGNMENT
3300	M	-OH, -NH
3060	W	Aromatic CH
2960, 2920	S	Aliphatic CH
2850	S	Aliphatic CH
1610	M	Aromatic ring stretch, C-N
1520	W	Aromatic ring stretch, C-N, salts
1460	M	Aliphatic CH
1380	W	Aliphatic CH, C-O
1270	M	C-O, amides
740	M	Aromatic substitution, C-Cl, C-N
700	W	Aromatic substitution, C-Cl, C-N

Comments: Similar to LC 6.

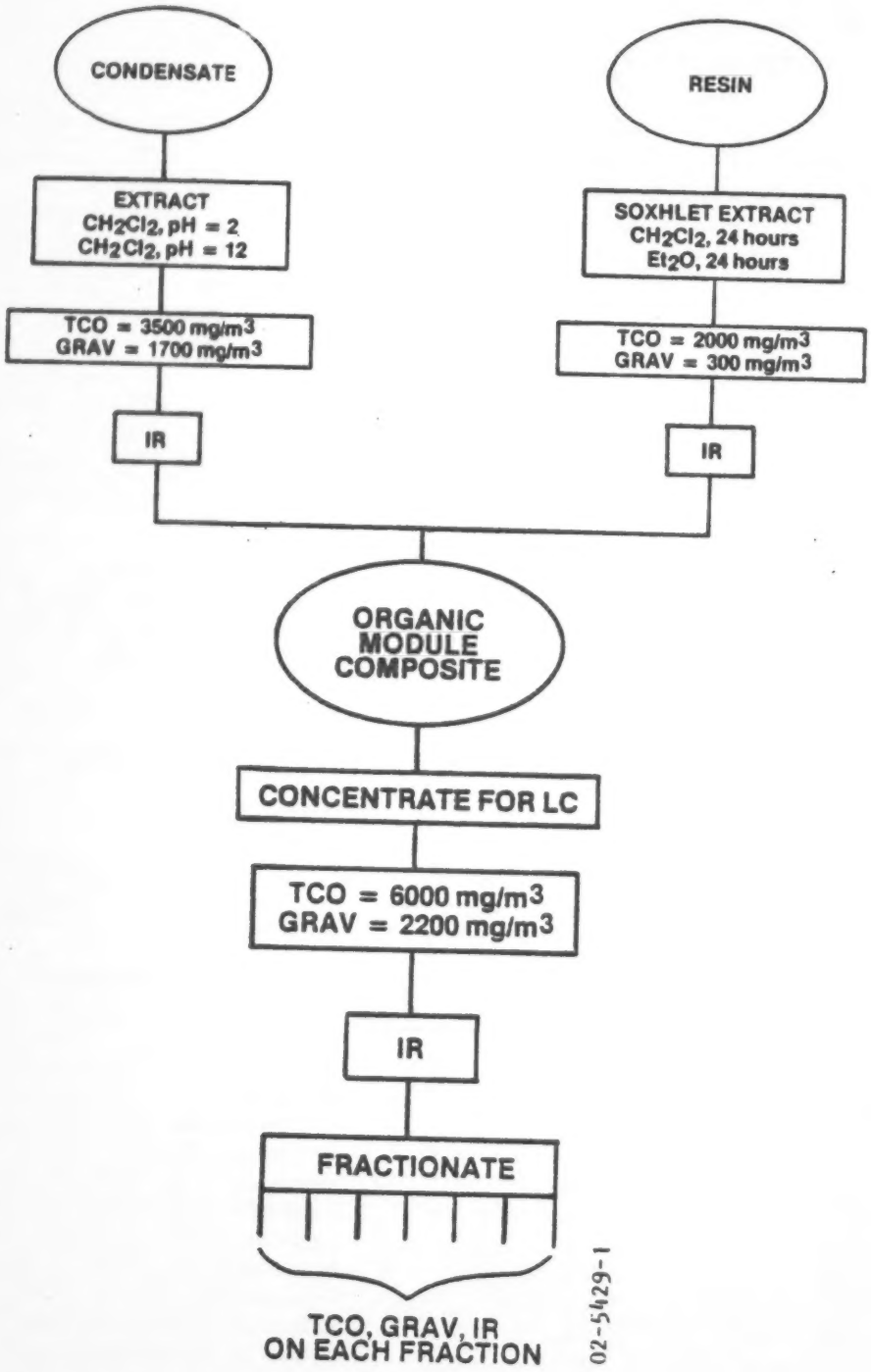

Figure D11. Product Gas Organic Module Composite Screening Analysis Schematic

TABLE D67. LC ANALYSIS RESULTS: PRODUCT GAS ORGANIC MODULE COMPOSITE

	TCO mg	GRAV mg	TOTAL mg	CONCENTRATION mg/SCM
Total Sample	33000	12000	45000	8100
Taken for LC	64.7	24.0	88.7	
Recovered	39.3	30.4	69.7	6400

	TCO mg	GRAV mg	SAMPLE TOTAL mg	CONCENTRATION mg/SCM
LC 1	6.4	11.5	9200	1600
LC 2	1.5	1.0	1300	230
LC 3	5.3	2.0	3700	660
LC 4	0.4	1.0	720	130
LC 5	4.8	1.4	3200	570
LC 6	5.3	2.5	4000	710
LC 7	15.6	11.0	14000	2500
% Recovery	61%	127%	80%	

SCM at 25°C (77°F) and 101 kPa (1 atm), dry basis.

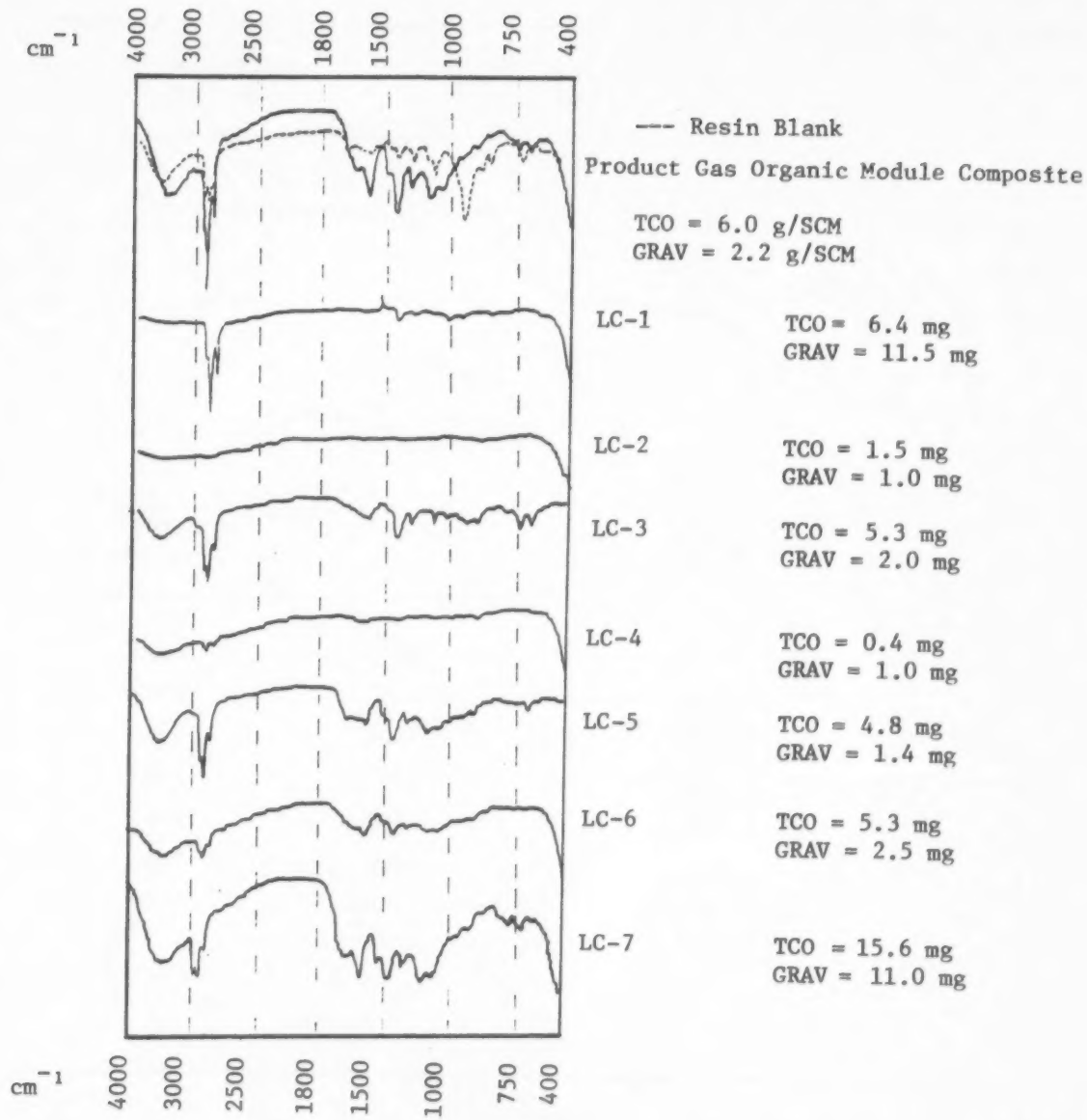

Figure D12 . Infrared Spectra, Product Gas Organic Module Composite

TABLE D68. INFRARED ANALYSIS: PRODUCT GAS COMPOSITE

IR REPORT

Sample: PRODUCT GAS COMPOSITE

WAVE NUMBER (cm^{-1})	INTENSITY	ASSIGNMENT
3350	M	-OH, -NH
3050	W	Aromatic CH
2960, 2920	S	Aliphatic CH
2860	M	Aliphatic CH
1710	W Br	Carbonyls
1680	M Br	Carbonyls
1600	M	Aromatic ring stretch, acids, amides, amines
1500	M Br	Aromatic ring stretch, C-N
1455	S	Aliphatic CH, primary alcohols, acids
1380	M	Aliphatic CH, C-O, C-S
1280	M	Aliphatic CH, esters, C-N
1220	W Br	C-O
1115	W Br	Aromatic overtones, C-N
1040	W	Aromatic overtones, C-O, C-N
810	W	Aromatic substitution, C-N
750	W	Aromatic substitution, C-N, C-Cl

Comments: Not heavily aromatic, contains significant oxygenated and nitrogenous material.

IR REPORT

Sample: PRODUCT GAS COMPOSITE LC 1

WAVE NUMBER (cm^{-1})	INTENSITY	ASSIGNMENT
2960, 2920	S	Aliphatic CH
2850	S	Aliphatic CH
1460	M	Aliphatic CH
1380	W	Aliphatic CH
1200	W	Aromatic overtones
1120	W	Aromatic overtones, aliphatic CH
960	W	Aliphatic CH

Comments: Aliphatic hydrocarbons.

TABLE D68. CONTINUED

IR REPORT

Sample: PRODUCT GAS COMPOSITE LC 2

WAVE NUMBER (cm^{-1})	INTENSITY	ASSIGNMENT
Insufficient material for spectrum		

IR REPORT

Sample: PRODUCT GAS COMPOSITE LC 3

WAVE NUMBER (cm^{-1})	INTENSITY	ASSIGNMENT
3450	M	-OH, -NH
3050	W	Aromatic CH
2960, 2920	S	Aliphatic CH
2860	S	Aliphatic CH
1600	M Br	Aromatic ring stretch, -NH
1450	M	Aliphatic CH
1380	M	Aliphatic CH, C-O, C-S
1260	M	C-O, C-N
1180	W	Aromatic overtones, C-O, C-N
810	M	Aromatic substitution, C-N
745	W	Aromatic substitution, C-N, C-Cl

Comments: Some aromatic character, primarily aliphatics with strong indications of oxygenated material.

IR REPORT

Sample: PRODUCT GAS COMPOSITE LC-4

WAVE NUMBER (cm^{-1})	INTENSITY	ASSIGNMENT
3400	S	-OH, -NH
2970, 2910	S	Aliphatic CH
2850	S	Aliphatic CH

Comments: Very weak spectrum

TABLE D68. CONTINUED

IR REPORT

Sample: PRODUCT GAS COMPOSITE LC 5

WAVE NUMBER (cm^{-1})	INTENSITY	ASSIGNMENT
3400	S	-OH, -NH
3050	W	Aromatic CH
2970, 2930	S	Aliphatic CH
2860	S	Aliphatic CH
1700	M Br	Carbonyls
1600	M	Aromatic ring stretch, C-N
1500	W Br	Aromatic ring stretch
1460	M	Aliphatic CH
1380	W	Aliphatic CH, C-O
1260	W	C-O, esters, C-N
750	W	Aromatic substitution, C-N, C-Cl

Comments: Weakly aromatic, strong indications of oxygenated compounds, amines and heterocyclic-N probable.

IR REPORT

Sample: PRODUCT GAS COMPOSITE LC 6

WAVE NUMBER (cm^{-1})	INTENSITY	ASSIGNMENT
3350	S	-OH, -NH
2970, 2930	S	Aliphatic CH
2860	M	Aliphatic CH
1600	M	Aromatic ring stretch, C-N
1450	M	Aliphatic CH
1380	W	Aliphatic CH, C-O, C-N

Comments: Weak spectrum

TABLE D68. CONTINUED

IR REPORT

Sample: PRODUCT GAS COMPOSITE LC 7

WAVE NUMBER (cm^{-1})	INTENSITY	ASSIGNMENT
3300	S	-OH, -NH
3050	W Br	Aromatic CH
2970, 2930	S	Aliphatic CH
2860	M	Aliphatic CH
1710	M Br	Carbonyls
1680	M Br	Carbonyls
1600	S	Aromatic ring stretch, C-N
1510	M	Aromatic ring stretch, C-N
1450	S Br	Aliphatic CH
1380	M	Aliphatic CH
1280	S	C-O
1215	M	C-O
1030	W	Aromatic overtones, C-O
810	W	Aromatic substitution, C-N
740	W	Aromatic substitution, C-Cl
680	W	Aromatic substitution, C-Cl

Comments: Carboxylic acids and amines probable.

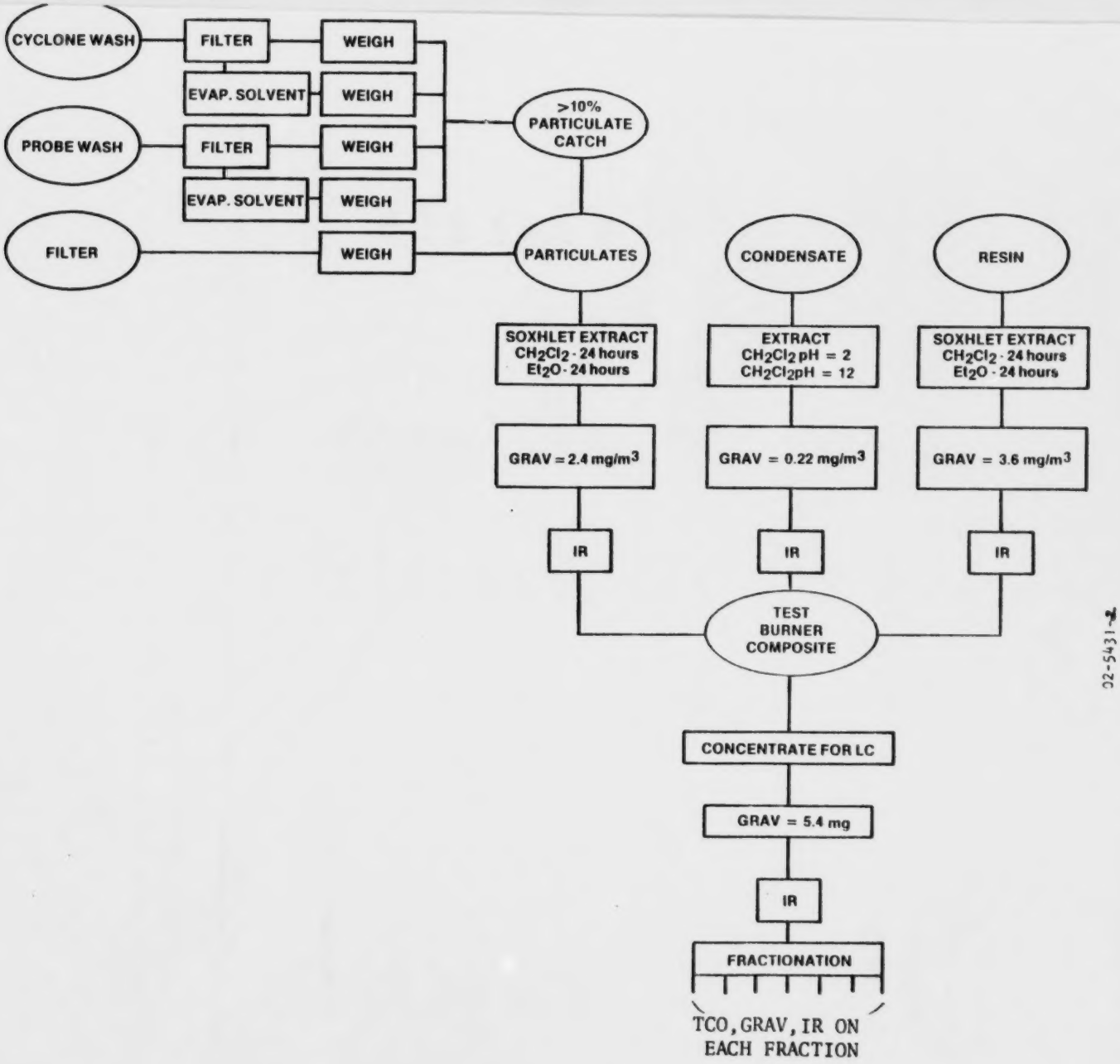

Figure D13. Test Burner Composite Screening Analysis Schematic

TABLE D69 . LC ANALYSIS RESULTS: TEST BURNER COMPOSITE

	TCO mg	GRAV mg	TOTAL mg	CONCENTRATION µg/SCM
Total Sample	*	160	160	5400
Taken for LC	*	90.3	90.3	
Recovered	*	78.2	78.2	4700

	TCO mg	GRAV mg	SAMPLE TOTAL mg	CONCENTRATION µg/SCM
LC 1	*	14.2	26	880
LC 2	*	2.2	4.0	130
LC 3	*	0.7	1.3	44
LC 4	*	2.1	3.8	130
LC 5	*	8.0	14	470
LC 6	*	36.2	66	2200
LC 7	*	14.8	27	910
% Recovery		87%	87%	

* Not required by protocol

SCM at 25°C (77°F) and 101 kPa (1 atm), dry basis.

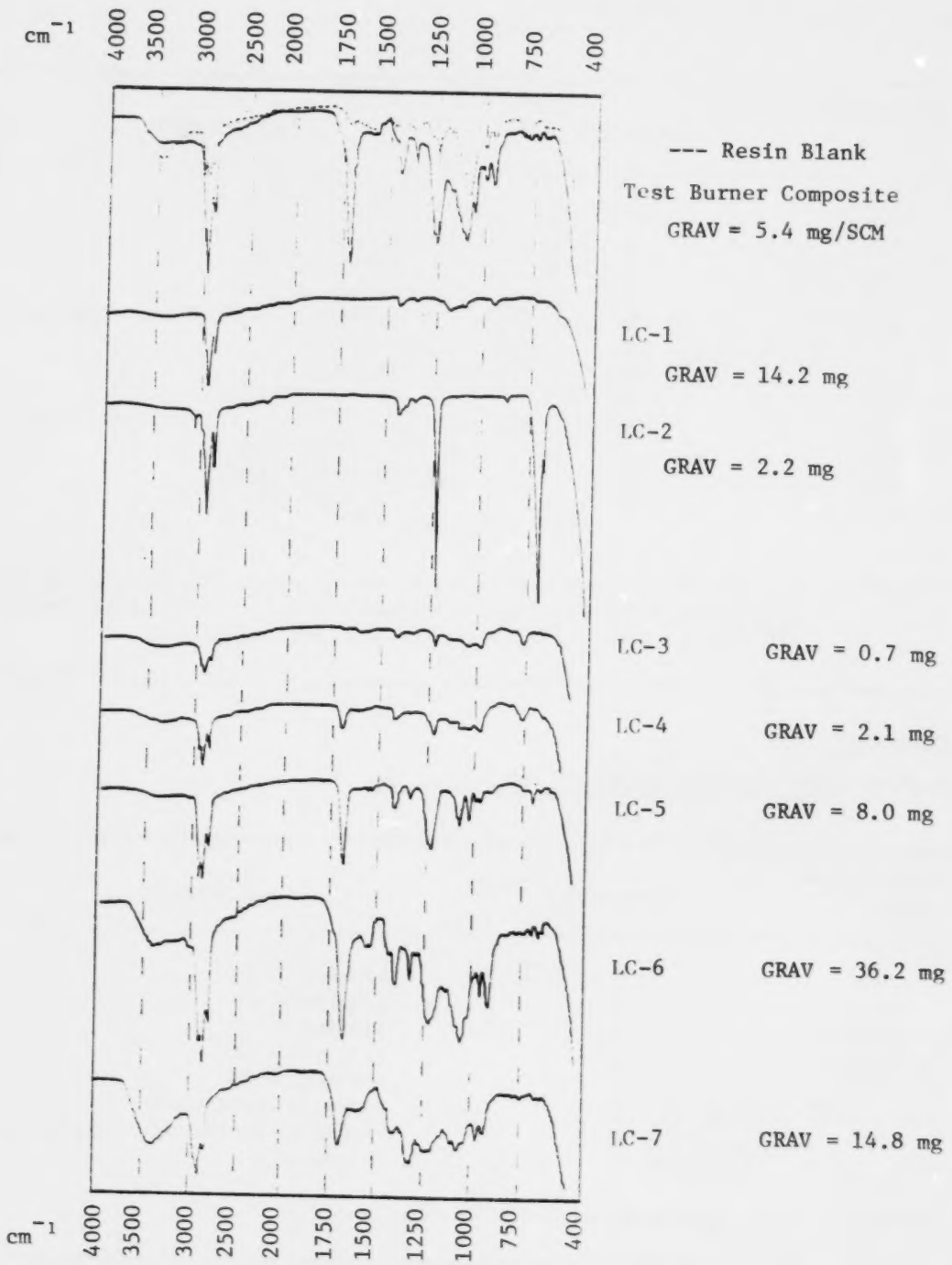

Figure D14. Infrared Spectra, Test Burner Composite

TABLE D70. INFRARED ANALYSIS: TEST BURNER COMPOSITE

IR REPORT

Sample: TEST BURNER COMPOSITE

WAVE NUMBER (cm^{-1})	INTENSITY	ASSIGNMENT
2960	S	Aliphatic CH
2930	S	Aliphatic CH
2880	S	Aliphatic CH
1730	S	Carbonyl
1600	W	Aromatic ring, amines, amides, acids
1460	M	In resin blank
1380	M	In resin blank
1275	S	C-O, ether, esters, alcohols
1120	S	In resin blank
1015	M	In resin blank
975	M	In resin blank

Comments: Negligible N-H and O-H stretch and no aromatic C-H stretch make assignments conflicting. Aliphatic ethers, esters, alcohols, aldehydes, etc., are the only potential assignments

IR REPORT

Sample: TEST BURNER COMPOSITE LC 1

WAVE NUMBER (cm^{-1})	INTENSITY	ASSIGNMENT
2950	S	Aliphatic CH
2920	S	Aliphatic CH
2850	S	Aliphatic CH
1460	M	Aliphatic CH
1375	W	Aliphatic CH
1200, 1120	M	Aromatic overtones
965	M	Aromatic overtones, aliphatic, bending

Comments: Weak spectrum, probably just aliphatics

TABLE D70. CONTINUED

IR REPORT

Sample: TEST BURNER COMPOSITE LC 2

WAVE NUMBER (cm^{-1})	INTENSITY	ASSIGNMENT
3050	M	Aromatic CH
2020, 2850	S	Aliphatic CH
2300	W	Nitriles, Si-H, C≡C
1660, 1640	W	Alkenes, aromatics
1465	M, Br	Aliphatics
1375	W	Aliphatics
1265	S	Inorganic sulfur, methyl silicones, phosphorous, esters, C-O
895	W	Alkenes, aromatic substibution
735	S	Aromatic substitution
700	M	Aromatic substitution

Comments: Absence of aromatic ring patterns surprising with good aromatic C-H. Heavy alkene possible but seems unlikely. Possible inorganic compounds present from weak peaks. Most probable is fused aromatic ring systems.

IR REPORT

Sample: TEST BURNER COMPOSITE LC 3

WAVE NUMBER (cm^{-1})	INTENSITY	ASSIGNMENT
3400	W	-OH, -NH
2960, 2930, 2850	S	Aliphatic CH
1740	W	Carbonyls
1450	M	Aliphatics
1375	W	Aliphatics, strong in resin blank
1260	S	C-O
1100	W	C-O, C-N, strong in resin blank
1020	W	C-H, C-O
800	S	Aromatics, amines, silicone, strong in resin blank

Comments: Very weak spectrum, possibly heterocyclic-N, carbonyl very poor, -OH stretch could be moisture. Possible heterocyclic-O or other oxygen containing compounds.

TABLE D70. CONTINUED

IR REPORT

Sample: TEST BURNER COMPOSITE LC 4

WAVE NUMBER (cm^{-1})	INTENSITY	ASSIGNMENT
3350	W	-OH, -NH
2960, 2930, 2860	S	Aliphatic CH
1740	S	Carbonyls
1460	M, Br	Aliphatic CH, in resin blank
1260	S	C-O, strong in resin blank
1020	W	C-H, C-O
800	M	Aromatics, amines, silicones, strong in resin blank

Comments: Weak spectrum, only the presence of the carbonyl distinguishes it from LC 3.

IR REPORT

Sample: TEST BURNER COMPOSITE LC 5

WAVE NUMBER (cm^{-1})	INTENSITY	ASSIGNMENT
3400	W	-OH, -NH
2970, 2920	S	Aliphatic CH
2860, 2850	S	Aliphatic CH
1725	S	Carbonyl
1600, 1580	W	Aromatic ring stretch, amines, amides
1460	M	Amides, alkane CH, primary alcohols
1380	W	Aliphatic C-H, alcohols, heterocyclic-O, -N
1260	S	Aromatic ethers, esters, heterocyclic-O, amides, carboxylics
1130	M	Alkenes, aromatic overtones, aldehydes, alcohols
1070	M	Aromatic overtones C-O
1020, 1040	W	Aromatic overtones C-O
730	W	Aromatic substitution, amines

Comments: No strong indication of aromatics. Amines probable, heterocyclic -O and -N probable.

TABLE D70. CONTINUED

IR REPORT

Sample: TEST BURNER COMPOSITE LC 6

WAVE NUMBER (cm^{-1})	INTENSITY	ASSIGNMENT
3400	M	-OH, -NH
3030	W	Aromatic CH
2970, 2930	S	Aliphatic CH
2870	S	Aliphatic CH
1730	S	Carbonyls
1620, 1580	M	Aromatic ring stretch, amides, amines
1460	M	Aliphatic CH, alcohols, aldehydes, amines
1370	M	Aliphatic CH, alcohols, aldehydes, amines
1280	S	Esters, ketones, heterocyclic-O, -N
1115	S	Aromatic overtones, C-O, C-N
1015	M	Aromatic overtones, C-O
970	S	Aliphatic CH
710	W	Aromatic substitution C-N, C-Cl
680	W	Aromatic substitution C-S, C-Cl

Comments: Similar to LC 5 but has more aromatic character.

IR REPORT

Sample: TEST BURNER COMPOSITE LC 7

WAVE NUMBER (cm^{-1})	INTENSITY	ASSIGNMENT
3400	S	-OH, -NH
2960, 2930	S	Aliphatic CH
2860	S	Aliphatic CH
1730	S	Carbonyls
1630	M Br	Alkenes, aromatic ring, amides, amines
1450	W Br	Aliphatics, C-O
1360	S	Aliphatics, C-O, C-N
1275	M Br	C-O, esters, C-N
1100	M Br	Aromatic overtones, C-O, C-N
1010	M	C-O, C-N stretch
970	M	Aliphatic CH, C-O, C-N stretch

Comments: Heavily oxygenated, carboxylic acids, and amines, probable.

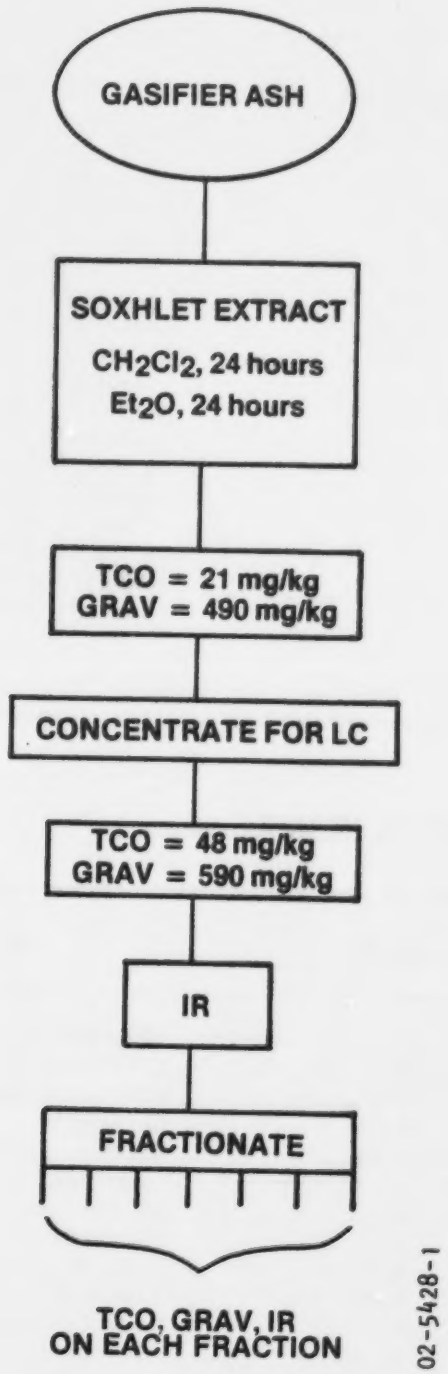

Figure D15. Gasifier Ash Screening Analysis Schematic

TABLE D71. LC ANALYSIS RESULTS: GASIFIER ASH

	TCO* mg	GRAV mg	TOTAL mg	CONCENTRATION mg/kg
Total Sample	46	550	600	640
Taken for LC	9.7	117.4	127.1	
Recovered	9.9	99.9	109.8	550

	TCO* mg	GRAV mg	SAMPLE TOTAL mg	CONCENTRATION mg/kg
LC 1	6.4	59.6	310	330
LC 2	1.0	2.0	14	15
LC 3	2.3	5.6	37	39
LC 4	ND	4.0	19	20
LC 5	0.04	5.2	24	26
LC 6	0.12	20.1	95	100
LC 7	ND	3.4	16	17
% Recovery	102%	85%	86%	

* Not required by protocol.

ND - Less than 0.01 mg total TCO.

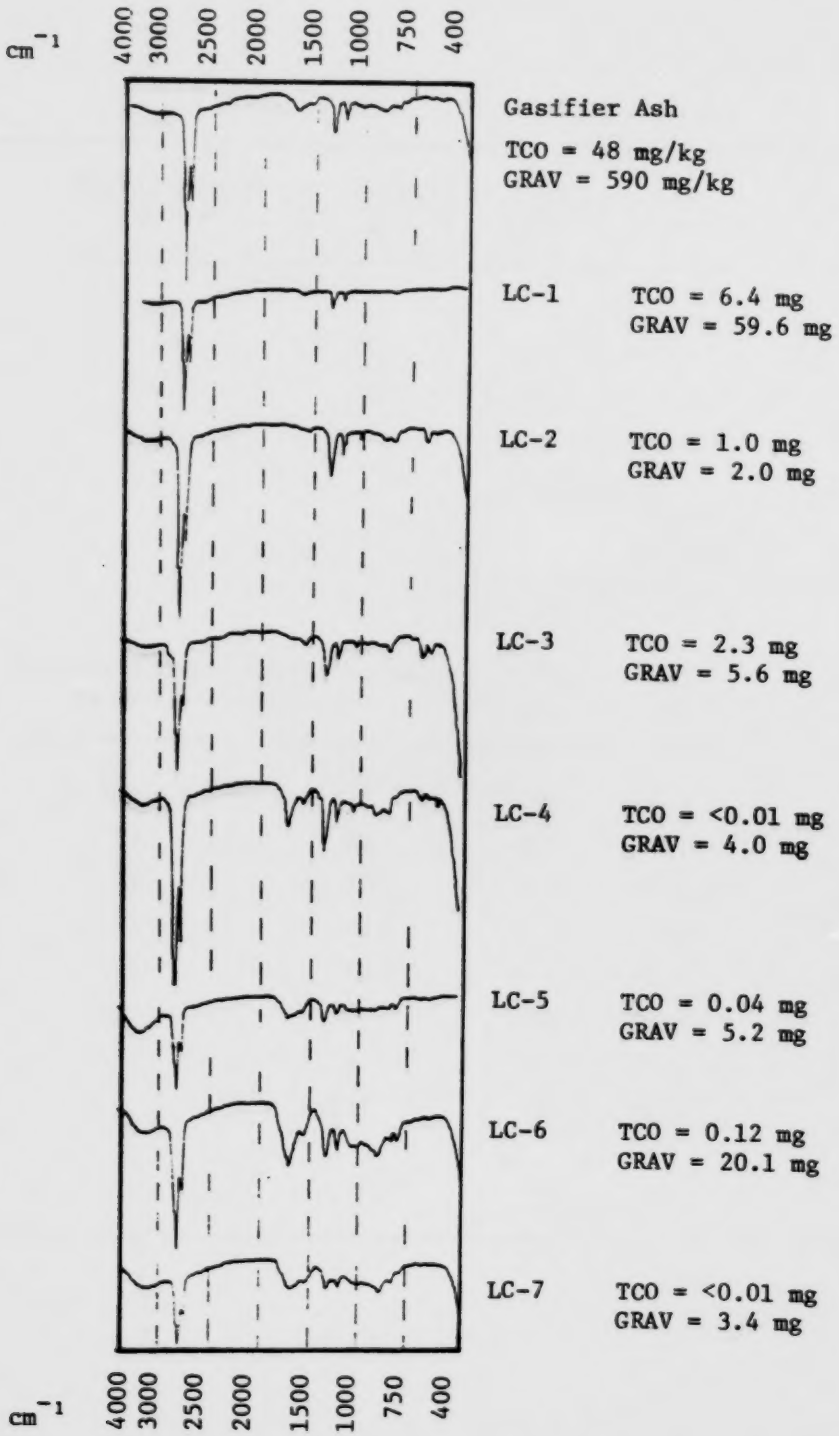

Figure D16. Infrared Spectra, Gasifier Ash

TABLE D72. INFRARED ANALYSIS: GASIFIER ASH

IR REPORT

Sample: GASIFIER ASH

WAVE NUMBER (cm^{-1})	INTENSITY	ASSIGNMENT
2970, 2930	S	Aliphatic CH
2860	S	Aliphatic CH
1700	W	Carbonyls
1600	W	Aromatic ring stretch
1460	M	Aliphatic CH, C-O
1380	M	Aliphatic CH, C-O
1265	W	C-O
1020	W	Aromatic overtones, C-O
810	W	Aromatic substitution
740	W	Aromatic substitution, C-Cl

Comments: Aliphatic material predominates, oxygenation present.

IR REPORT

Sample: GASIFIER ASH LC 1

WAVE NUMBER (cm^{-1})	INTENSITY	ASSIGNMENT
2960, 2920	S	Aliphatic CH
2850	S	Aliphatic CH
1650	W	Aliphatic C=C
1460	M	Aliphatic CH
1380	W	Aliphatic CH

Comments: Aliphatic hydrocarbons, some alkenes

TABLE D72. CONTINUED

IR REPORT

Sample: GASIFIER ASH LC 2

WAVE NUMBER (cm^{-1})	INTENSITY	ASSIGNMENT
3050	W	Aromatic CH
2960, 2920	S	Aliphatic CH
2850	S	Aliphatic CH
1600	W	Aromatic ring stretch
1460	M	Aliphatic CH
1370	M	Aliphatic CH
1260	S	C-O, C-N
1070	W Br	Aromatic overtones, C-O, C-N
1030	W Br	Aromatic overtones, C-O, C-N
810	W	Aromatic substitution, C-N

Comments: Weakly aromatic, no evidence of carbonyls. Heterocyclic-O or heterocyclic-N a possibility. Branched chain aliphatics predominate.

IR REPORT

Sample: GASIFIER ASH LC 3

WAVE NUMBER (cm^{-1})	INTENSITY	ASSIGNMENT
3050	W Br	Aromatic CH
2960, 2915	S	Aliphatic CH
2850	S	Aliphatic CH
1700	W Br	Carbonyls
1600	W Br	Aromatic ring stretch, C-N
1460	M	Aliphatic CH
1375	M	Aliphatic CH
1260	W	C-O, C-N
1030	W Br	Aromatic overtones, C-O, C-N
870	W Br	Aromatic overtones, C-S, C-O, C-N
850	M	Aromatic overtones, C-O, C-N
750	W	Aromatic overtones, C-O, C-N, C-Cl
700	W	Aromatic overtones, C-O, C-N, C-Cl

Comments: Very similar to LC 2 except more aromatics, some weak carbonyl and some evidence for sulfur and halogens.

TABLE D72. CONTINUED

IR REPORT

Sample: GASIFIER ASH LC 4

WAVE NUMBER (cm^{-1})	INTENSITY	ASSIGNMENT
3400	W	-OH, -NH
2960, 2920	S	Aliphatic CH
2860	S	Aliphatic CH
1710	M	Carbonyls
1600	W	Aromatic ring stretch, C-N
1460	S	Aliphatic CH
1380	M	Aliphatic CH
1265	W	C-O, C-N
1120	W	Aromatic overtones, C-O, C-N
1030	W	Aromatic overtones, C-O, C-N
810	W	Aromatic substitution, C-S
750	W	Aromatic substitution, C-Cl
730	W	Aromatic substitution, C-Cl
700	W	Aromatic substitution, C-Cl

Comments: Heterocyclic-N, heterocyclic-O, heterocyclic-S all possible, some carbonyl compounds, still a lot of brached aliphatics. Some evidence of aromatic substitution but no significant aromatic CH absorbances. Evidence of halogens.

IR REPORT

Sample: GASIFIER ASH LC 5

WAVE NUMBER (cm^{-1})	INTENSITY	ASSIGNMENT
3400	M	-OH, -NH
2950, 2920	S	Aliphatic CH
2850	M	Aliphatic CH
1700	M Br	Carbonyls
1600	M Br	Aromatic ring stretch, C-N
1460	M	Aliphatic CH
1360	W	Aliphatic CH, C-O
970	W	C-O, C-N, C-S, Aliphatic CH

Comments: Rather weak spectrum. No strong indication of aromatics, probably not much heterocyclic material.

TABLE D72. CONTINUED

IR REPORT

Sample: GASIFIER ASH LC 6

WAVE NUMBER (cm^{-1})	INTENSITY	ASSIGNMENT
3350	W	-OH, -NH
2970, 2920	S	Aliphatic CH
2850	S	Aliphatic CH
1710	S Br	Carbonyls
1510	M	Amines, aromatic ring stretch
1460	M	Aliphatic CH
1380	M	Aliphatics, C-O, C-S
1100	W Br	Aromatic overtones, C-O
1020	W	C-O, C-N
975	W	C-O, C-N

Comments: Similar to LC 5 and LC 7.

IR REPORT

Sample: GASIFIER ASH LC 7

WAVE NUMBER (cm^{-1})	INTENSITY	ASSIGNMENT
3350	W	-OH, -NH
2960, 2915	S	Aliphatic CH
2850	S	Aliphatic CH
1700	M Br	Carbonyls
1600	M Sh	Amines, aromatic ring stretch
1460	M	Aliphatics
1380	M	Aliphatics, alcohols, amides
1100	W	Phthalates, aromatic overtones, C-O, C-N

Comments: Quite similar to LC 5 and 6, probably contains carboxylic acids.

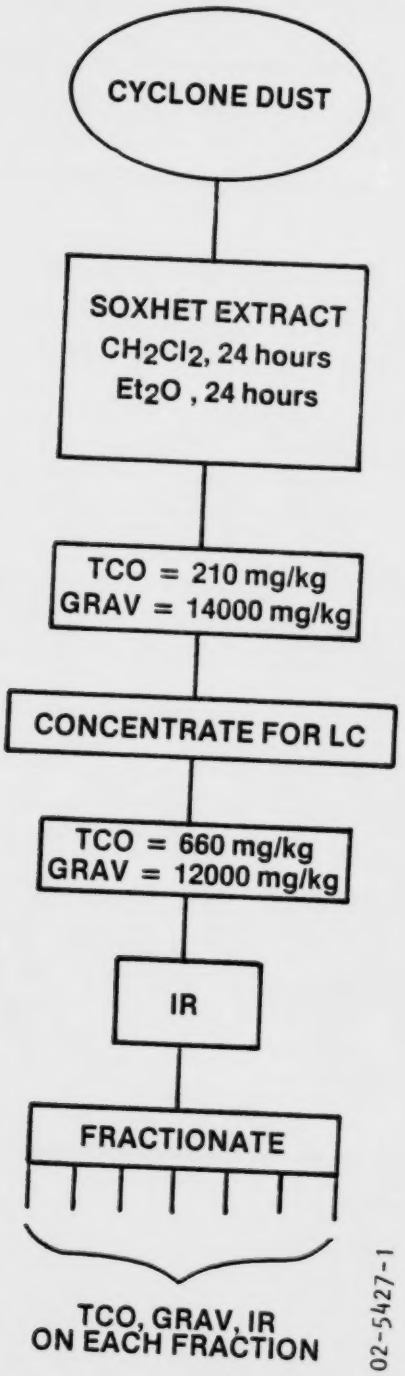

Figure D17. Cyclone Dust Organic Screening Analysis Schemtaic

TABLE D73. LC ANALYSIS RESULTS: CYCLONE DUST

	TCO* mg	GRAV mg	TOTAL mg	CONCENTRATION mg/kg
Total Sample	94	2600	2700	13000
Taken for LC	3.2	88.2	91.4	
Recovered	1.7	75.3	77.0	11000

	TCO* mg	GRAV mg	SAMPLE TOTAL mg	CONCENTRATION mg/kg
LC 1	1.4	17.3	550	2600
LC 2	ND	1.0	29	140
LC 3	0.12	9.6	280	1300
LC 4	ND	10.3	300	1400
LC 5	0.09	5.4	160	770
LC 6	0.05	23.8	700	3400
LC 7	ND	7.9	230	1100
% Recovery	53%	85%	83%	

* Not required by protocol.

ND - Less than 0.01 mg total TCO.

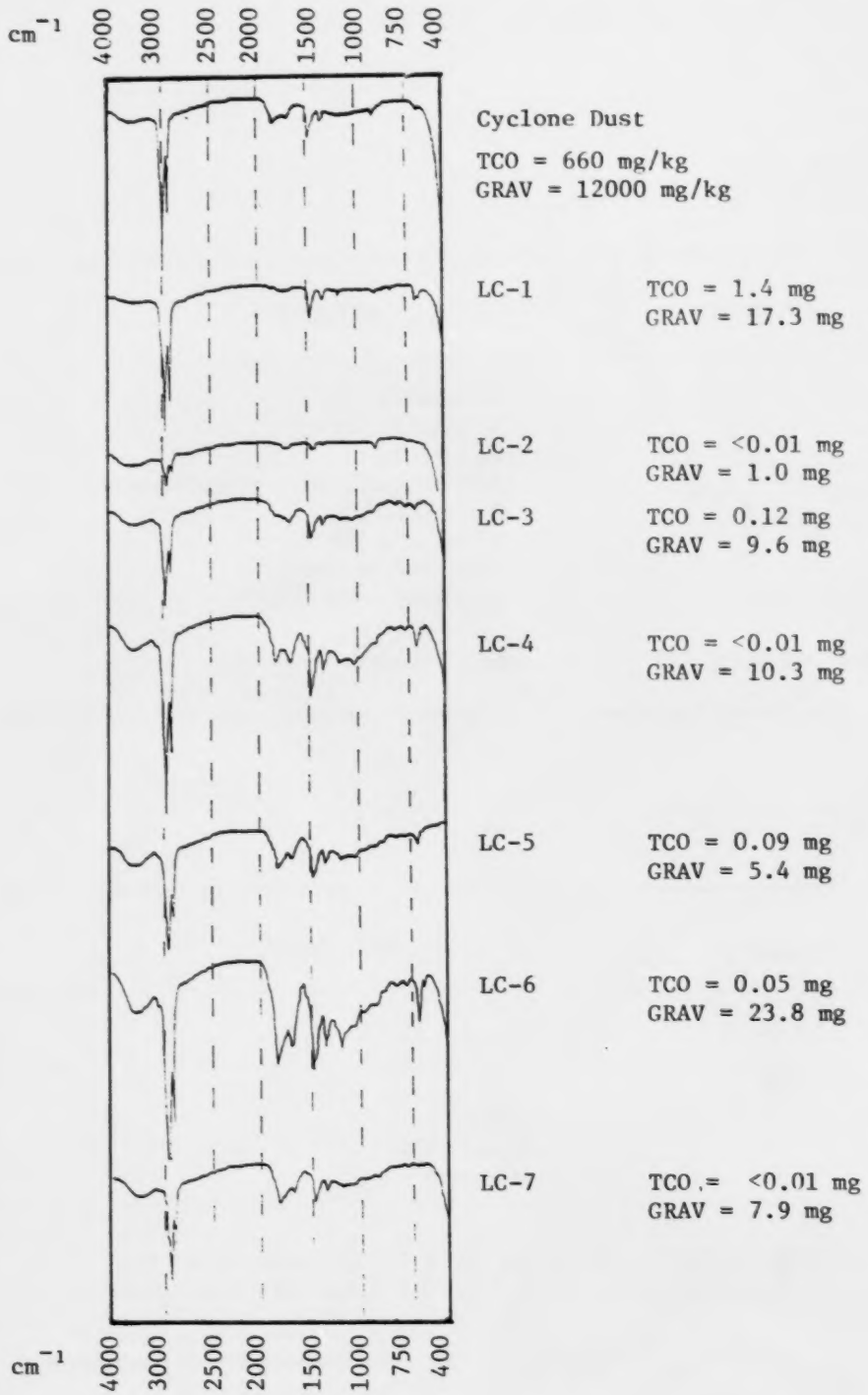

Figure D18 . Infrared Spectra, Cyclone Dust

TABLE D74. INFRARED ANALYSIS: CYCLONE DUST

IR REPORT

Sample: CYCLONE DUST

WAVE NUMBER (cm^{-1})	INTENSITY	ASSIGNMENT
2970, 2915	S	Aliphatic CH
2850	S	Aliphatic CH
1720	M	Carbonyls
1600	W	Amines, aromatic ring stretch
1460	M	Aliphatic CH
1380	W	Aliphatic CH
1020	W	C-O, C-C stretch
730, 720	W	Aromatic substitution

Comments: Primarily aliphatic material, some carbonyls present.

IR REPORT

Sample: CYCLONE DUST, LC 1

WAVE NUMBER (cm^{-1}	INTENSITY	ASSIGNMENT
2950	M	Aliphatic CH
2920, 2850	S	Aliphatic CH
1430	M	Alkanes
1360	W	Alkanes
1260	W	Aliphatics
720, 740	W	Alkenes

Comments: Aliphatic hydrocarbons. Peaks at 1430 & 1360 present in all fractions. Not present in q.c. check of cells and instrument

TABLE D74. CONTINUED

IR REPORT

Sample: CYCLONE DUST, LC 2

WAVE NUMBER (cm^{-1})	INTENSITY	ASSIGNMENT
2980	M	Aliphatic CH
2920, 2860	S	Aliphatic CH
1020	W	C-O

Comments: No indication of aromatics, appears to be slight band spreading from LC-1. Possibly some ether residue.

IR REPORT

Sample: CYCLONE DUST, LC 3

WAVE NUMBER (cm^{-1})	INTENSITY	ASSIGNMENT
2950	M	Aliphatic CH
2920, 2850	S	Aliphatic CH
1700	W Br	Carbonyls
1600	W Br	C=C
1465	M	Alkanes
1380	W	Alkanes
750	W	Alkanes

Comments: Retains a great deal of aliphatic character, possibly some aromatics present.

TABLE D74. CONTINUED

IR REPORT

Sample: CYCLONE DUST, LC 4

WAVE NUMBER (cm^{-1})	INTENSITY	ASSIGNMENT
3400	W	-OH, -NH
2920, 2850	S	Aliphatic CH
1700	M	Carbonyls
1600	M	C=C
1465	S	Alkanes
1380	M	Alkanes
1170	W	C-O
740	M	Alkenes, aromatic substitution

Comments: Still strongly aliphatic, more oxygenated substitution. Heterocyclic-O probable, heterocyclic-N possible, phthalates probably present.

IR REPORT

Sample: CYCLONE DUST, LC 5

WAVE NUMBER (cm^{-1})	INTENSITY	ASSIGNMENT
3400	W	-OH, -NH
2920, 2850	S	Aliphatic CH
1700	M Br	Carbonyls
1600	M Br	C=C
1460	M	Alkanes
1380	M	Alkanes
740	W	Alkenes, aromatic substitution

Comments: Very similar to LC-4

TABLE D74. CONTINUED

IR REPORT

Sample: CYCLONE DUST, LC 6

WAVE NUMBER (cm^{-1})	INTENSITY	ASSIGNMENT
3400	M	-OH, -NH
3050	W	Aromatic CH
2930, 2860	S	Aliphatic CH
1710	S Br	Carbonyls
1610	S Br	C=C, C=N
1465	S	Alkanes
1380	S	Alkanes
1270	M	C-O
890	W	Aromatics, acids
820	W	Aromatics, amines
740	M	Aromatics, amines
710	W	Aromatics, amines

Comments: Similar to LC-5 but showing more aromatic character. Phthalates, carboxylic acids, heterocyclic-N compounds probable.

IR REPORT

Sample: CYCLONE DUST, LC 7

WAVE NUMBER (cm^{-1})	INTENSITY	ASSIGNMENT
3450	W	-OH, -NH
2960	M	Aliphatic CH
2920, 7860	S	Aliphatic CH
1710	M Br	Carbonyls
1600	W Br	C=C, C=N
1465	M	Alkanes
1380	W	Alkanes
1270	W	C-O

Comments: Similar to LC-6 except no strong aromatic character.

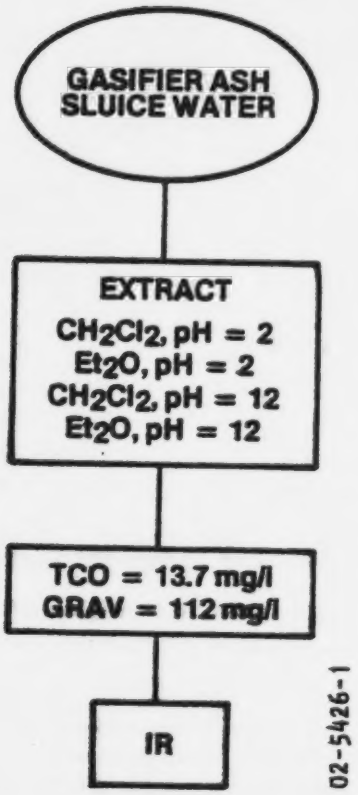

Figure D19. Gasifier Ash Sluice Water Screening Analysis Schematic

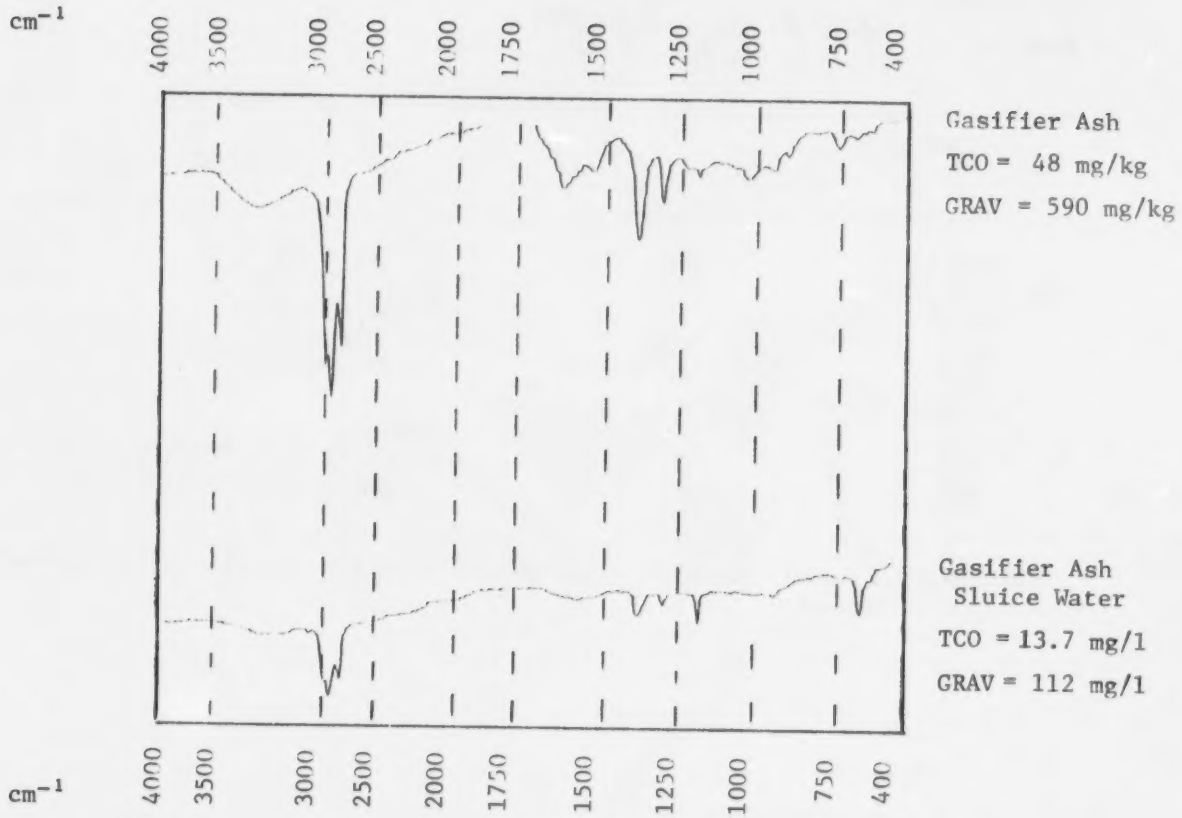

Figure D20. Infrared Spectrum, Gasifier Ash Sluice Water

TABLE D75. INFRARED ANALYSIS: GASIFIER ASH SLUICE WATER

IR REPORT

Sample: GASIFIER ASH SLUICE WATER

WAVE NUMBER (cm^{-1})	INTENSITY	ASSIGNMENT
3050	W	Aromatic CH
2960, 2930, 2920	S	Aliphatic CH
2850	S	Aliphatic CH
1455	M Br	Aliphatic CH
1375	W	Aliphatic CH
1265	M	C-O
1030	W	C-O
740	M	Aromatic substitution, C-Cl
700	W	Aromatic substitution, C-Cl

Comments: Slightly enriched in aromatics from the gasifier ash, carbonyl absent.

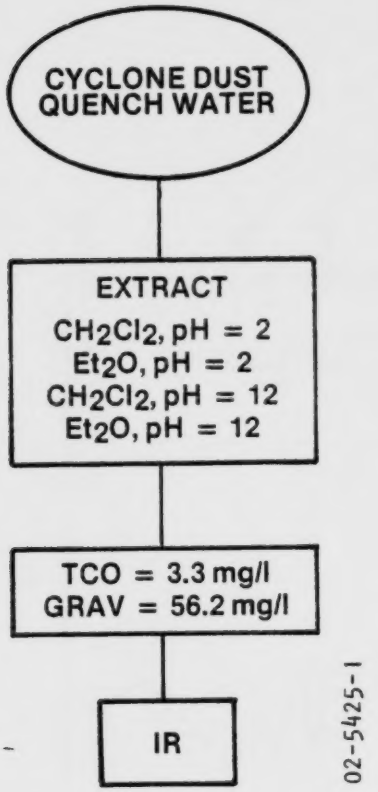

Figure D21. Cyclone Dust Quench Water Screening Analysis Schematic

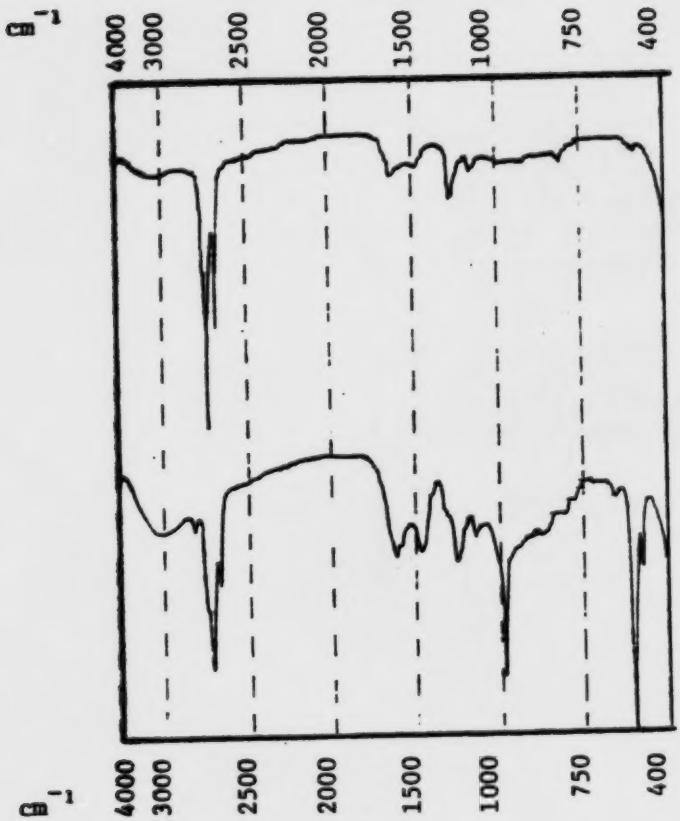

Figure D22 . Infrared Spectra, Cyclone Dust Quench Water

TABLE D76. INFRARED ANALYSIS: CYCLONE DUST QUENCH WATER

IR REPORT

Sample: CYCLONE DUST QUENCH WATER

WAVE NUMBER (cm^{-1})	INTENSITY	ASSIGNMENT
3350	M	-OH, -NH
3060	W	Aromatic CH
2960	M	Aliphatic CH
2920	S	Aliphatic CH
2860	M	Aliphatic CH
1710	M Br	Carbonyls
1610	M Br	C=C, C-N
1500	W Sh	Aromatic ring overtones
1460	M	Alkanes
1380	W	Alkanes
1270	S	C-O
810	W	Aromatic substitution, amines
740	S	Aromatic substitution, amines
710	M	Aromatic substitution, amines

Comments: Considerably enriched in aromatics from the cyclone dust, but otherwise quite similar.

D4.0 DETAILED ORGANIC ANALYSIS RESULTS

The results of the instrumental analyses given in the following data section were obtained using the analytical methods described in Section 4.0 of Appendix C. The results of the thermal desorption GC-MS analysis of the Tenax GC/silica gel trap sample of the product gas are given in Table D77. Also given in this data section are the results of the halogen-specific GC analysis using the Hall electrolytic conductivity detector. Samples for specific ion monitoring GC/MS were prioritized on the basis of the weighted discharge severity (WDS) and the results of thse anlayses are given along with the concentration of the compounds of concern. The sample and analysis methods are listed by stream in the detailed organic anlaysis results matrix which is Figure D23. The results tables follow in the order shown in the Figure.

SAMPLE	HALL GC	SIM GC-MS
Product Gas Particulates		
Total Sample	●	
LC-1		
LC-2		●
LC-3	●	●
LC-4	●	●
LC-5		●
LC-6	●	●
LC-7		
Product Gas Organic Module Composite		
Total Sample	●	
LC-1		
LC-2		●
LC-3	●	●
LC-4		
LC-5	●	●
LC-6		
LC-7		
Test Burner Composite		
Total Sample	●	
LC-1		
LC-2	●	●
LC-3	●	
LC-4		
LC-5		
LC-6		
LC-7		
Gasifier Ash		
Total Sample	●	
LC-1		
LC-2		
LC-3	●	
LC-4		
LC-5	●	
LC-6	●	
LC-7	●	
Cyclone Dust		
Total Sample	●	
LC-1		
LC-2	●	
LC-3	●	
LC-4		
LC-5		
LC-6		
LC-7		

Figure D23. Detailed Organic Analysis Results Matrix

TABLE D77. THERMAL DESORPTION GC-MS ANALYSIS RESULTS: PRODUCT GAS TENAX GC/SILICA GEL TRAP

Compounds Identified	Amount ng	Concentration µg/SCM*
Benzene	>1300	>13,000
Thiophene	190	1,900
Toluene	26	260
Ethyl Benzene	3.9	39
m- and *p*-Xylene	4.8	48
o-Xylene	4.8	48

*SCM at 25°C (77°F) and 101 kPa (1 atm), dry basis.

SAMPLE	HALL GC	SIM GC-MS
Total Sample	•	
LC-1		
LC-2		•
LC-3	•	•
LC-4	•	•
LC-5		•
LC-6	•	•
LC-7		

Figure D24. Product Gas Particulates

TABLE D78. HALOGEN-SPECIFIC GC ANALYSIS RESULTS: PRODUCT GAS PARTICULATES

SAMPLE	HALOGENATED CONCENTRATION*
Total Sample	<200 µg/SCM
LC-3	ND
LC-4	ND
LC-6	ND

SCM at 25°C (77°F) and 101 kPa (1 atm), dry basis.

ND - no detectable response.

*Weighed response factor approximating a monochlorinated compound MW = 180.

TABLE D79. SPECIFIC ION MONITORING GC-MS ANALYSIS RESULTS: PRODUCT GAS PARTICULATES, LC-2

COMPOUND	RETENTION TIME	QUANTIFICATION IONS	AMOUNT PPM	CONCENTRATION ¤ µg/SCM
Polychlorinated biphenyls†	23.3	222, 224, 256, 258	≤0.033	≤7.6
Benzo(a)anthracene	31.3	228, 226	0.12*	28
7,12-Dimethylbenzo(a)anthracene		256, 241	ND	
Benzo(b)fluoranthene	35.1	252, 250	0.044*	10
Dibenzo(a,i)pyrene		302, 300	ND	
Benzo(c)phenanthrene ☆		228, 226	ND	
Benzo(a)pyrene		252, 250	ND	
3-Methyl cholanthrene		268, 253	ND	
Dibenzo(a,h)anthracene		178, 176	ND	

SCM at 25°C (77°F) and 101 kPa (1 atm), dry basis.

ND = not detected.

¤aEB = a x 10^b.

*Includes possible coeluting isomers.

☆Standard unavilable, based on benzo(a)anthracene and chrysene.

†Based on PCB-3 Cl.

TABLE D80. SPECIFIC ION MONITORING GC-MS ANALYSIS RESULTS:
PRODUCT GAS PARTICULATES, LC-3

COMPOUND	RETENTION TIME	QUANTIFICATION IONS	AMOUNT PPM	CONCENTRATION ¤ µg/SCM
Polychlorinated biphenyls†		222, 224, 256, 258	ND	
Biphenyl	16.5	154, 153	0.9	1.2E2
Benzo(a)anthracene	31.1	228, 226	12.6*	1.7E3
7,12-Dimethylbenzo(a)anthracene	34.6	256, 241	1.17*	1.6E2
Benzo(b)fluoranthene	35.0	252, 250	2.7*	3.7E2
Dibenzo(a,i)pyrene		302, 300	ND	
Benzo(c)phenanthrene☆	30.4	228, 226	7.04*	9.7E2
Benzo(a)pyrene	35.4	252, 250	1.4	1.9E2
3-Methyl cholanthrene	36.8	268, 253	0.034	4.7
Dibenzo(a,h)anthracene	43.1	278, 276	0.044	6.1

SCM at 25°C (77°F) and 101 kPa (1 atm), dry basis.

ND = not detected.

¤ aEb = a x 10^b.

*Includes possible coeluting isomers.

†Based on PCB-3 Cl.

☆Standard unavailable, based on benzo(a)anthracene and chrysene.

TABLE D81. SPECIFIC ION MONITORING GC-MS ANALYSIS RESULTS: PRODUCT GAS PARTICULATES, LC-4

COMPOUND	RETENTION TIME	QUANTIFICATION IONS	AMOUNT PPM	CONCENTRATION µg/SCM
Chloronitrobenzene		157, 159	ND	
Dinitrotoluenes	19.8, 20.2, 21.2	165, 89	16*	2.2E3
Ethyl methyl dioxolane		101, 87	ND	
Tetramethyl succinonitrile†		136, 121	ND	
Benzothiophene		134, 89	ND	
Benzonitrile		103, 76	ND	

SCM at 25°C (77°F) and 101 kPa (1 atm), dry basis.

ND = not detected.

¤ aEB = a x 10^b.

*All possible isomers included.

†No standard mass spectrum available.

TABLE D82 SPECIFIC ION MONITORING GC-MS ANALYSIS RESULTS:
PRODUCT GAS PARTICULATES, LC-5

COMPOUND	RETENTION TIME	QUANTIFICATION IONS	AMOUNT PPM	CONCENTRATION ¤ µg/SCM
N-Nitrosodimethylamine		74, 42	ND	
Aminotoluene		107, 106	ND	
β-propiolactone†		42, 43	ND	
Trinitrophenol$^{\alpha}$		229, 91	ND	
Dinitrocresol$^{\alpha}$	12.5	198, 182	6.1	8.4E2
Dihydroacridine*	20.8	181, 180	0.17	23
Dibenzoacridine		279, 277	ND	

SCM at 25°C (77°F) and 101 kPa (1 atm), dry basis.

ND = not detected.

¤ aEb = a x 10^{b}.

*Standard unavailable, based on dihydrophenanthridine.

†No standard available.

$^{\alpha}$GC column: 1% SP-1240 DA for acidic compounds.

TABLE D83. SPECIFIC ION MONITORING GC-MS ANALYSIS RESULTS:
PRODUCT GAS PARTICULATES, LC-6

COMPOUND	RETENTION TIME	QUANTIFICATION IONS	AMOUNT PPM	CONCENTRATION µg/SCM
N-Nitrosodimethylamine		74, 42	ND	
Aminotoluene		107, 106	ND	
β-propiolactone†		42, 43	ND	
Trinitrophenol[α]		229, 91	ND	
Dinitrocresol[α]		198, 182	ND	
Dihydroacridine*	20.3, 21.33	181, 180	0.66	91
Dibenzoacridine		279, 277	ND	

SCM at 25°C (77°F) and 101 kPa (1 atm), dry basis.

ND = not detected.

*Standard unavailable, based on dihydrophenanthridine.

†No standard available.

[α]GC column: 1% SP-1240 DA for acidic compounds.

SAMPLE	HALL GC	SIM GC-MS
Total Sample	•	
LC-1		
LC-2		•
LC-3	•	•
LC-4		
LC-5	•	•
LC-6		
LC-7		

Figure D25. Product Gas Organic Module Composite

TABLE D84. HALOGEN-SPECIFIC GC ANALYSIS RESULTS: PRODUCT GAS MODULE COMPOSITE

SAMPLE	HALOGENATED CONCENTRATION*
Total Sample	<2 mg/SCM
LC-3	ND
LC-5	ND

SCM at 25°C (77°F) and 101 kPa (1 atm), dry basis.

ND - no detectable response.

*Weighed response factor approximating a monochlorinated compound MW = 180.

TABLE D85. SPECIFIC ION MONITORING GC-MS ANALYSIS RESULTS:
PRODUCT GAS ORGANIC MODULE COMPOSITE, LC-2

COMPOUND	RETENTION TIME	QUANTIFICATION IONS	AMOUNT PPM	CONCENTRATION µg/SCM
Polychlorinated Biphenyls†	23.3	222, 224, 256, 258	≤0.031	≤7.2
Benzo(a)anthracene	31.3	228, 226	0.035*	8.1
7,12-Dimethylbenzo(a) anthracene		256, 241	ND	
Benzo(b)fluoranthene		252, 250	ND	
Dibenzo(a,i)pyrene		302, 300	ND	
Benzo(c)phenanthrene☆		228, 226	ND	
Benzo(a)pyrene		252, 250	ND	
3-Methyl cholanthrene		268, 253	ND	
Dibenzo(a,h)anthracene		278, 276	ND	

SCM at 25°C (77°F) and 101 kPa (1 atm), dry basis.

ND = not detected.

*Includes possible coeluting isomers.

†Based on PCB-3 Cl.

☆Standard unavailable, based on benzo(a)anthracene and chrysene.

TABLE D86. SPECIFIC ION MONITORING GC-MS ANALYSIS RESULTS:
PRODUCT GAS ORGANIC MODULE COMPOSITE, LC-3

COMPOUND	RETENTION TIME	QUANTIFICATION IONS	AMOUNT PPM	CONCENTRATION ¤ µg/SCM
Polychlorinated biphenyls†		222, 224, 256, 258	ND	
Biphenyl	16.5	154, 153	16.1	5E3
Benzo(a)anthracene	31.3	228, 226	0.46*	140
7,12-Dimethylbenzo(a)anthracene		256, 241	ND	
Benzo(b)fluoranthene	35.0	252, 250	0.033*	10
Dibenzo(a,i)pyrene		302, 300	ND	
Benzo(c)phenanthrene☆	30.5	228, 226	0.21	65
Benzo(a)pyrene		252, 250	ND	
3-Methyl cholanthrene		268, 253	ND	
Dibenzo(a,h)anthracene		278, 276	ND	

SCM at 25°C (77°F) and 101 kPa (1 atm), dry basis.

ND = not detected.

¤aEb = a x 10^b

*Includes possible coeluting isomers.

†Based on PCB-3 Cl.

☆Standard unavailable, based on benzo(a)anthracene and chrysene.

TABLE D87. SPECIFIC ION MONITORING GC-MS ANALYSIS RESULTS:
PRODUCT GAS ORGANIC MODULE COMPOSITE, LC-5

COMPOUND	RETENTION TIME	QUANTIFICATION IONS	AMOUNT PPM	CONCENTRATION ¤ µg/SCM
N-Nitrosodimethylamine		74, 42	ND	
Aminotoluene		107, 106	ND	
β-propiolactone†		42, 43	ND	
Trinitrophenol[α]		229, 91	ND	
Dinitrocresol[α]	12.5	198, 182	3.2	9.8E2
Dihydroacridine		181, 180	ND	
Dibenzoacridine		279, 277	ND	

SCM at 25°C (77°F) and 101 kPa (1 atm), dry basis.

ND = not detected.

¤aEb = a x 10^b.

†No standard available.

[α] GC column: 1% SP-1240 DA for acidic compounds.

SAMPLE	HALL GC	SIM GC-MS
Total Sample	•	
LC-1		
LC-2	•	•
LC-3	•	
LC-4		
LC-5		
LC-6		
LC-7		

Figure D26. Test Burner Composite

TABLE D88. HALOGEN-SPECIFIC GC ANALYSIS RESULTS: TEST BURNER COMPOSITE

SAMPLE	HALOGENATED CONCENTRATION*
Total Sample	<30 µg/SCM
LC-2	<2 µg/SCM
LC-3	<5 µg/SCM

SCM at 25°C (77°F) and 101 kPa (1 atm), dry basis.

*Weighed response factor approximating a monochlorinated compound MW = 180.

TABLE D89. SPECIFIC ION MONITORING GC-MS ANALYSIS RESULTS:
TEST BURNER COMPOSITE, LC-2

COMPOUND	RETENTION TIME	QUANTIFICATION IONS	AMOUNT PPM	CONCENTRATION¤ µg/SCM
Benzo(a)pyrene		252, 250	ND	
Dibenzo(a,h)anthracene		278, 276	ND	
7,12-Dimethylbenzo(a)anthracene		256, 258	ND	
Benzo(a)anthracene	31.8	228, 226	0.17*	4.5E2
Polychlorinated biphenyls†		188, 190, 222, 224, 256, 258	ND	

SCM at 25°C (77°F) and 101 kPa (1 atm), dry basis.

ND = not detected.

¤ aEb = a x 10^b.

*Includes possible coeluting isomers.

†Based on PCB-3 Cl.

SAMPLE	HALL GC	SIM GC-MS
Total Sample	•	
LC-1		
LC-2		
LC-3	•	
LC-4		
LC-5	•	
LC-6	•	
LC-7	•	

Figure D27. Gasifier Ash

TABLE D90. HALOGEN-SPECIFIC GC ANALYSIS RESULTS: GASIFIER ASH

SAMPLE	HALOGENATED CONCENTRATION*
Total Sample	<300 mg/kg[†]
LC-3	<30 µg/kg
LC-5	<25 µg/kg
LC-6	<5 mg/kg
LC-7	<150 µg/kg

[†]Possible interference.

*Weighed response factor approximating a monochlorinated compound MW = 180.

SAMPLE	HALL GC	SIM GC-MS
Total Sample	•	
LC-1		
LC-2	•	
LC-3	•	
LC-4		
LC-5		
LC-6		
LC-7		

Figure D28. Cyclone Dust.

TABLE D91. HALOGEN-SPECIFIC GC ANALYSIS RESULTS: CYCLONE DUST

SAMPLE	HALOGENATED CONCENTRATION*
Total Sample	<35 mg/kg
LC-2	ND
LC-3	ND

*Weighed response factor approximating a monochlorinated compoung MW = 180.

ND = no detectable response.

APPENDIX E
SOURCE ANALYSIS MODEL/1A RESULTS

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NOTES FOR THE FOLLOWING TABLES:

P = compound is on Priority Pollutant List

W = compound is the worst case within the appropriate matrix for that category/subcategory

T = concentration is total organic loading (TCO + GRAV) for the LC fraction

S = concentration is from SSMS

D = concentration is determined experimentally; from on-site analysis, SIM-GC/MS, Anion/Cation analysis ICP or AAS

Conc = concentration in µg/SCM at 25°C (77°F) and 101 kPa (1 atm) dry basis, for gases; µg/l (ppb) for liquids; and µg/g (ppm) for solids

WDS = units are g/s for all streams

LCCAT = established LC fraction if applicable

* = indicates that the compound appears more than once in the listing, i.e. in more than one LC fraction

PRODUCT GAS PARTICULATE

FLOW RATE 590 G/S (0.57 SCM/S, DRY BASIS)

8.523 SCM AT 25C AND 760 MM HG SAMPLED

TOTAL ORGANIC LOADING = 7.3 G/SCM

TOTAL TCO = 380 MG/SCM TOTAL GRAV = 6900 MG/SCM

0.17% ORIGINAL SAMPLE TO LC

LC TCO = 5.3 MG LC GRAV = 97.6 MG LC TOTAL = 102.9 MG

LCCAT	ORGANIC LOADING
1	870000.0
2	89000.0
3	680000.0
4	410000.0
5	490000.0
6	3600000.0
7	300000.0

FLOW RATE = 590.00

STATE: GAS, UNITS IN MICROGRAMS/SCM

IMPACT: HEALTH

EXPERIMENTALY DETERMINED DATA

SPARK SOURCE DATA

PRODUCT GAS PARTICULATE, HEALTH IMPACT

DMEG NO.				COMPOUND NAME	TYPE	CONC E-6 G/SCM	US	MDS G/S	LCCAT
04 B 020*	P	W		1,1'-DICHLOROMETHYL ETHER	T	4.90E 05	9.80E 04	5.80E 07	5
04 B 020*	P	W		1,1'-DICHLOROMETHYL ETHER	T	4.10E 05	8.20E 04	4.83E 07	4
10 C 100*				1,4-DIAMINOBENZENE	T	3.60E 06	3.60E 04	2.12E 07	6
10 C 043*				4-AMINOTOLUENE	T	3.60E 06	3.30E 04	1.93E 07	6
10 C 041*				2-AMINOTOLUENE	T	3.60E 06	3.30E 04	1.93E 07	6
10 C 042*				3-AMINOTOLUENE	T	3.60E 06	3.30E 04	1.93E 07	6
12 A 040*	P			N-NITROSODIETHYLAMINE	T	3.60E 06	3.00E 04	1.80E 07	6
10 C 220*				2-AMINONAPHTHALENE	T	3.60E 06	2.11E 04	1.24E 07	6
20 B 041*				3,5-DINITRO-P-CRESOL	T	3.60E 06	1.80E 04	1.10E 07	6
20 B 020*	P	W		4,6-DINITRO-O-CRESOL	T	3.60E 06	1.80E 04	1.10E 07	6
20 B 042*				2,6-DINITRO-P-CRESOL	T	3.60E 06	1.80E 04	1.10E 07	6
21 C 100*	P	W		BENZO(A)PYRENE	D	1.90E 02	9.50E 03	5.60E 06	3
02 B 140*	P	W		HEXACHLOROCYCLOPENTADIENE	T	8.70E 05	7.90E 03	4.70E 06	1
10 C 082*				M-ANISIDINE	T	3.60E 06	7.20E 03	4.24E 06	6
10 C 083*				P-ANISIDINE	T	3.60E 06	7.20E 03	4.24E 06	6
10 C 080*				ANISIDINES	T	3.60E 06	7.20E 03	4.24E 06	6
10 C 081*				O-ANISIDINE	T	3.60E 06	7.20E 03	4.24E 06	6
19 A 060*	P	W		PENTACHLOROPHENOL	T	3.60E 06	7.20E 03	4.24E 06	6
13 A 100*		W		BENZENETHIOL	T	3.60E 06	7.20E 03	4.24E 06	6
10 C 200*				1-AMINONAPHTHALENE	T	3.60E 06	6.42E 03	3.80E 06	6
23 C 160*		W		DIBENZO(C,G)CARBAZOLE	T	4.90E 05	4.90E 03	2.90E 06	5
10 C 100*				1,4-DIAMINOBENZENE	T	4.90E 05	4.90E 03	2.90E 06	5
13 A 140*				PERCHLOROMETHANETHIOL	T	3.60E 06	4.50E 03	2.70E 06	6
10 C 042*				3-AMINOTOLUENE	T	4.90E 05	4.50E 03	2.62E 06	5
10 C 043*				4-AMINOTOLUENE	T	4.90E 05	4.50E 03	2.62E 06	5
10 C 041*				2-AMINOTOLUENE	T	4.90E 05	4.50E 03	2.62E 06	5
23 C 160*		W		DIBENZO(C,G)CARBAZOLE	T	4.10E 05	4.10E 03	2.41E 06	4
12 A 040*	P			N-NITROSODIETHYLAMINE	T	4.90E 05	4.10E 03	2.40E 06	5
08 A 122*				PALMITIC ACID	T	3.60E 06	3.60E 03	2.12E 06	6
10 C 140*	P			BENZIDINE	T	3.60E 06	3.60E 03	2.12E 06	6
08 A 121*				MYRISTIC ACID	T	3.60E 06	3.60E 03	2.12E 06	6
08 A 123*				STEARIC ACID	T	3.60E 06	3.60E 03	2.12E 06	6
08 A 120*		W		SATURATED LONG CHAIN ACIDS (MW:228-285)	T	3.60E 06	3.60E 03	2.12E 06	6
08 C 060*		W		6-HEXANELACTAM	T	3.60E 06	3.60E 03	2.12E 06	6

PRODUCT GAS PARTICULATE, HEALTH IMPACT

DMEG NO.			COMPOUND NAME	TYPE	CONC E-6 G/SCM	US	WDS G/S	LCCAT
21 B 106*			7-METHYL BENZO(C)PHENANTHRENE	T	6.80E 05	3.10E 03	1.82E 06	3
21 B 103*			2-METHYL BENZO(C)PHENANTHRENE	T	6.80E 05	3.10E 03	1.82E 06	3
21 B 108*			2-ETHYL BENZO(C)PHENANTHRENE	T	6.80E 05	3.10E 03	1.82E 06	3
21 B 105*			6-METHYL BENZO(C)PHENANTHRENE	T	6.80E 05	3.10E 03	1.82E 06	3
21 B 108*			ISOPROPYL BENZO(C)PHENANTHRENE	T	6.80E 05	3.10E 03	1.82E 06	3
21 B 107*			8-METHYL BENZO(C)PHENANTHRENE	T	6.80E 05	3.10E 03	1.82E 06	3
21 B 104*			5-METHYL BENZO(C)PHENANTHRENE	T	6.80E 05	3.10E 03	1.82E 06	3
21 B 109*			6-ETHYL BENZO(C)PHENANTHRENE	T	6.80E 05	3.10E 03	1.82E 06	3
21 B 102*			1-METHYL BENZO(C)PHENANTHRENE	T	6.80E 05	3.10E 03	1.82E 06	3
21 B 10A*			N-PROPYL BENZO(C)PHENANTHRENE	T	6.80E 05	3.10E 03	1.82E 06	3
21 B 101*			BENZO(C)PHENANTHRENE	T	6.80E 05	3.10E 03	1.82E 06	3
10 C 220*			2-AMINONAPHTHALENE	T	4.90E 05	2.90E 03	1.70E 06	5
10 C 120*			4-AMINOBIPHENYL	T	3.60E 06	2.80E 03	1.63E 06	6
12 B 020*		W	N-METHYL-N-NITROSOANILINE	T	3.60E 06	2.80E 03	1.63E 06	6
20 A 102*			2,5-DINITROPHENOL	T	3.60E 06	2.60E 03	1.51E 06	6
20 A 101*	P		2,4-DINITROPHENOL	T	3.60E 06	2.60E 03	1.51E 06	6
20 A 100*			DINITROPHENOLS	T	3.60E 06	2.60E 03	1.51E 06	6
20 A 103*			2,6-DINITROPHENOL	T	3.60E 06	2.60E 03	1.51E 06	6
20 A 060*			2-AMINO-4,6-DINITROPHENOL	T	3.60E 06	2.60E 03	1.51E 06	6
20 B 041*			3,5-DINITRO-P-CRESOL	T	4.90E 05	2.50E 03	1.44E 06	5
20 B 042*			2,6-DINITRO-P-CRESOL	T	4.90E 05	2.50E 03	1.44E 06	5
20 B 020*	P	W	4,6-DINITRO-O-CRESOL	T	4.90E 05	2.50E 03	1.44E 06	5
18 B 060*		W	1,4-DIHYDROXYBENZENE	T	3.60E 06	1.80E 03	1.10E 06	6
02 A 380*		W	HEXACHLOROCYCLOHEXANE	T	8.70E 05	1.74E 03	1.02E 06	1
12 A 060*	P		N-NITROSODIPROPYLAMINE	T	3.60E 06	1.50E 03	8.90E 05	6
08 A 140*			OLEIC ACID	T	3.60E 06	1.10E 03	6.43E 05	6
10 C 082*			M-ANISIDINE	T	4.90E 05	9.80E 02	5.80E 05	5
10 C 083*			P-ANISIDINE	T	4.90E 05	9.80E 02	5.80E 05	5
19 A 060*	P	W	PENTACHLOROPHENOL	T	4.90E 05	9.80E 02	5.80E 05	5
10 C 081*			O-ANISIDINE	T	4.90E 05	9.80E 02	5.80E 05	5
13 A 100*		W	BENZENETHIOL	T	4.90E 05	9.80E 02	5.80E 05	5
10 C 080*			ANISIDINES	T	4.90E 05	9.80E 02	5.80E 05	5
08 B 060*		W	B-PROPIOLACTONE	T	4.90E 05	9.80E 02	5.80E 05	5
10 C 200*			1-AMINONAPHTHALENE	T	3.00E 05	9.40E 02	5.53E 05	7
				T	4.90E 05	8.80E 02	5.20E 05	5

PRODUCT GAS PARTICULATE, HEALTH IMPACT

DMEG NO.		COMPOUND NAME	TYPE	CONC E-6 G/SCM	DS	WDS G/S	LCCAT
23 D 020*	W	BENZOTHIAZOLE	T	3.60E 06	8.40E 02	4.93E 05	6
02 B 140*	P W	HEXACHLOROCYCLOPENTADIENE	T	8.90E 04	8.10E 02	4.80E 05	2
23 D 040*		METHYL BENZOTHIAZOLE	T	3.60E 06	7.70E 02	4.51E 05	6
08 D 281*		DIMETHYL PHTHALATE	T	3.60E 06	7.20E 02	4.24E 05	6
08 D 283*		DI-N-BUTYL PHTHALATE	T	3.60E 06	7.20E 02	4.24E 05	6
08 D 282*		DIETHYL PHTHALATE	T	3.60E 06	7.20E 02	4.24E 05	6
08 D 280*	P W	PHTHALATE ESTERS (MW:194-279)	T	3.60E 06	7.20E 02	4.24E 05	6
08 D 300*	P	DI-2-ETHYLHEXYL PHTHALATE	T	3.60E 06	7.20E 02	4.24E 05	6
02 A 180*		DIBROMODICHLOROMETHANE	T	3.60E 06	7.20E 02	4.24E 05	6
08 A 101*		CAPROIC ACID	T	8.70E 05	6.21E 02	3.70E 05	1
08 A 102*		CAPRYLIC ACID	T	3.60E 06	6.20E 02	3.70E 05	6
08 A 104*		LAURIC ACID	T	3.60E 06	6.20E 02	3.70E 05	6
08 A 100*		SATURATED LONG CHAIN ACIDS (MW:116-201)	T	3.60E 06	6.20E 02	3.70E 05	6
08 A 103*		CAPRIC ACID	T	3.60E 06	6.20E 02	3.70E 05	6
21 D 060*		DIBENZO(A,L)PYRENE	T	3.60E 06	6.20E 02	3.70E 05	6
21 B 060*	W	7,12-DIMETHYLBENZ(A)ANTHRACENE	T	6.80E 05	6.20E 02	3.64E 05	3
13 A 140*		PERCHLOROMETHANETHIOL	D	1.60E 02	6.20E 02	3.63E 05	3
23 A 102*		3-CHLOROPYRIDINE	T	4.90E 05	6.12E 02	3.61E 05	5
23 A 100*	W	CHLOROPYRIDINES	T	3.60E 06	6.10E 02	3.60E 05	6
23 A 103*		4-CHLOROPYRIDINE	T	3.60E 06	6.10E 02	3.60E 05	6
23 A 101*		2-CHLOROPYRIDINE	T	3.60E 06	6.10E 02	3.60E 05	6
10 A 060*		ETHANOLAMINE	T	3.60E 06	6.10E 02	3.60E 05	6
19 A 040*	P	2,4-DICHLOROPHENOL	T	3.60E 06	6.00E 02	3.54E 05	6
08 A 121*		MYRISTIC ACID	T	3.60E 06	5.14E 02	3.03E 05	6
17 B 060*	W	1-CHLORO-4-NITROBENZENE	T	4.90E 05	4.90E 02	2.90E 05	5
17 B 040*	W	1-CHLORO-2-NITROBENZENE	T	4.90E 05	4.90E 02	2.90E 05	5
08 A 123*		STEARIC ACID	T	4.90E 05	4.90E 02	2.90E 05	5
08 A 122*		PALMITIC ACID	T	4.90E 05	4.90E 02	2.90E 05	5
08 C 060*	W	6-HEXANELACTAM	T	4.90E 05	4.90E 02	2.90E 05	5
10 C 140*	P	BENZIDINE	T	4.90E 05	4.90E 02	2.90E 05	5
08 A 120*	W	SATURATED LONG CHAIN ACIDS (MW:228-285)	T	4.90E 05	4.90E 02	2.90E 05	5
22 D 020*	P W	INDENO(1,2,3-CD)PYRENE	T	4.90E 05	4.90E 02	2.90E 05	5
22 C 020*	P	BENZO(K)FLUORANTHENE	T	6.80E 05	4.30E 02	2.50E 05	3
21 A 180*	P W	PHENANTHRENE	T	6.80E 05	4.30E 02	2.50E 05	3
			T	6.80E 05	4.30E 02	2.50E 05	3

PRODUCT GAS PARTICULATE, HEALTH IMPACT

DMEG NO.		COMPOUND NAME	TYPE	CONC E-6 G/SCM	DS	WDS G/S	LCCAT
21 B 109*		6-ETHYL BENZO(C)PHENANTHRENE	T	8.90E 04	4.04E 02	2.40E 05	2
21 B 102*		1-METHYL BENZO(C)PHENANTHRENE	T	8.90E 04	4.04E 02	2.40E 05	2
21 B 10A*		N-PROPYL BENZO(C)PHENANTHRENE	T	8.90E 04	4.04E 02	2.40E 05	2
21 B 107*		8-METHYL BENZO(C)PHENANTHRENE	T	8.90E 04	4.04E 02	2.40E 05	2
21 B 104*		5-METHYL BENZO(C)PHENANTHRENE	T	8.90E 04	4.04E 02	2.40E 05	2
21 B 106*		7-METHYL BENZO(C)PHENANTHRENE	T	8.90E 04	4.04E 02	2.40E 05	2
21 B 103*		2-METHYL BENZO(C)PHENANTHRENE	T	8.90E 04	4.04E 02	2.40E 05	2
21 B 101*		BENZO(C)PHENANTHRENE	T	8.90E 04	4.04E 02	2.40E 05	2
21 B 108*		ISOPROPYL BENZO(C)PHENANTHRENE	T	8.90E 04	4.04E 02	2.40E 05	2
21 B 105*		6-METHYL BENZO(C)PHENANTHRENE	T	8.90E 04	4.04E 02	2.40E 05	2
21 B 108*		2-ETHYL BENZO(C)PHENANTHRENE	T	8.90E 04	4.04E 02	2.40E 05	2
21 B 142*		5-METHYL CHRYSENE	T	6.80E 05	3.80E 02	2.22E 05	3
21 B 141*		4-METHYL CHRYSENE	T	6.80E 05	3.80E 02	2.22E 05	3
21 B 140*		METHYL CHRYSENES	T	6.80E 05	3.80E 02	2.22E 05	3
10 C 120*		4-AMINOBIPHENYL	T	4.90E 05	3.80E 02	2.22E 05	5
17 A 060*	W	4-NITROBIPHENYL	T	4.90E 05	3.80E 02	2.22E 05	5
12 B 020*	W	N-METHYL-N-NITROSOANILINE	T	4.90E 05	3.80E 02	2.22E 05	5
14 B 020	W	DIMETHYL SULFOXIDE	T	3.00E 05	3.70E 02	2.20E 05	7
18 A 083*		P-ETHYLPHENOL	T	3.60E 06	3.60E 02	2.12E 05	6
18 A 082*		M-ETHYLPHENOL	T	3.60E 06	3.60E 02	2.12E 05	6
06 A 020*	W	ETHYLENE GLYCOL	T	3.60E 06	3.60E 02	2.12E 05	6
18 A 041*		M-CRESOL	T	3.60E 06	3.60E 02	2.12E 05	6
18 A 043*		P-CRESOL	T	3.60E 06	3.60E 02	2.12E 05	6
18 A 080*	W	ETHYLPHENOLS	T	3.60E 06	3.60E 02	2.12E 05	6
18 A 040*	W	CRESOLS	T	3.60E 06	3.60E 02	2.12E 05	6
18 A 081*		O-ETHYLPHENOL	T	3.60E 06	3.60E 02	2.12E 05	6
18 A 042*		O-CRESOL	T	3.60E 06	3.60E 02	2.12E 05	6
20 A 102*		2,5-DINITROPHENOL	T	4.90E 05	3.50E 02	2.10E 05	5
20 A 080*		2-AMINO-4,6-DINITROPHENOL	T	4.90E 05	3.50E 02	2.10E 05	5
20 A 103*		2,6-DINITROPHENOL	T	4.90E 05	3.50E 02	2.10E 05	5
20 A 100*		DINITROPHENOLS	T	4.90E 05	3.50E 02	2.10E 05	5
20 A 101*	P	2,4-DINITROPHENOL	T	4.90E 05	3.50E 02	2.10E 05	5
15 B 060*	W	4,4'-DIPHENYLBIPHENYL	T	6.80E 05	3.40E 02	2.00E 05	3
23 B 200*		BENZ(C)ACRIDINE	T	3.60E 06	3.30E 02	1.93E 05	6

PRODUCT GAS PARTICULATE, HEALTH IMPACT

DMEG NO.		COMPOUND NAME	TYPE	CONC E-6 G/SCM	DS	WDS G/S	LCCAT
17 A 084*	P	2,4-DINITROTOLUENE	T	4.90E 05	3.30E 02	1.92E 05	5
17 A 085*		2,5-DINITROTOLUENE	T	4.90E 05	3.30E 02	1.92E 05	5
17 A 083*		2,3-DINITROTOLUENE	T	4.90E 05	3.30E 02	1.92E 05	5
17 A 086*		3,5-DINITROTOLUENE	T	4.90E 05	3.30E 02	1.92E 05	5
17 A 081*	P	2,6-DINITROTOLUENE	T	4.90E 05	3.30E 02	1.92E 05	5
17 A 082*		3,4-DINITROTOLUENE	T	4.90E 05	3.30E 02	1.92E 05	5
17 A 080*		DINITROTOLUENES	T	4.90E 05	3.30E 02	1.92E 05	5
17 A 060*	W	4-NITROBIPHENYL	T	4.10E 05	3.20E 02	1.90E 05	4
21 B 120*	P	CHRYSENE	T	6.80E 05	3.10E 02	1.82E 05	3
08 A 123*		STEARIC ACID	T	3.00E 05	3.00E 02	1.80E 05	7
08 A 120*	W	SATURATED LONG CHAIN ACIDS (MW:228-285)	T	3.00E 05	3.00E 02	1.80E 05	7
08 A 121*		MYRISTIC ACID	T	3.00E 05	3.00E 02	1.80E 05	7
08 A 122*		PALMITIC ACID	T	3.00E 05	3.00E 02	1.80E 05	7
07 B 100*	W	CAMPHOR	T	3.60E 06	3.00E 02	1.80E 05	6
18 A 143*		2,5-XYLENOL	T	3.60E 06	2.80E 02	1.63E 05	6
18 A 141*		2,3-XYLENOL	T	3.60E 06	2.80E 02	1.63E 05	6
18 A 144*		2,6-XYLENOL	T	3.60E 06	2.80E 02	1.63E 05	6
18 A 146*		3,4-XYLENOL	T	3.60E 06	2.80E 02	1.63E 05	6
18 A 142*	P	2,4-XYLENOL	T	3.60E 06	2.80E 02	1.63E 05	6
18 A 145*		3,5-XYLENOL	T	3.60E 06	2.80E 02	1.63E 05	6
18 A 140*		XYLENOLS	T	3.60E 06	2.80E 02	1.63E 05	6
17 A 086*		3,5-DINITROTOLUENE	T	4.10E 05	2.73E 02	1.61E 05	4
17 A 085*		2,5-DINITROTOLUENE	T	4.10E 05	2.73E 02	1.61E 05	4
17 A 083*		2,3-DINITROTOLUENE	T	4.10E 05	2.73E 02	1.61E 05	4
17 A 084*	P	2,4-DINITROTOLUENE	T	4.10E 05	2.73E 02	1.61E 05	4
17 A 082*		3,4-DINITROTOLUENE	T	4.10E 05	2.73E 02	1.61E 05	4
17 A 081*	P	2,6-DINITROTOLUENE	T	4.10E 05	2.73E 02	1.61E 05	4
21 C 160*		PICENE	T	6.80E 05	2.72E 02	1.60E 05	3
08 D 080*		METHYL METHACRYLATE	T	3.60E 06	2.60E 02	1.51E 05	6
04 A 050*	W	EPICHLORHYDRIN	T	4.90E 05	2.50E 02	1.44E 05	5
04 A 060*	W	1-CHLORO-1,3-EPOXYPROPANE	T	4.90E 05	2.50E 02	1.44E 05	5
04 A 040*	W	2-CHLORO-1,2-EPOXYPROPANE	T	4.90E 05	2.50E 02	1.44E 05	5
18 B 060*	W	1,4-DIHYDROXYBENZENE	T	4.90E 05	2.50E 02	1.44E 05	5
23 A 020*		PYRIDINE	T	3.60E 06	2.40E 02	1.41E 05	6

PRODUCT GAS PARTICULATE, HEALTH IMPACT

OMEG NO.			COMPOUND NAME	TYPE	CONC E-6 G/SCM	DS	WDS G/S	LCCAT
21 C 120*			BENZO(E)PYRENE	T	6.80E 05	2.30E 02	1.55E 05	3
23 B 020*			QUINOLINES	T	3.60E 06	2.30E 02	1.32E 05	6
23 B 022*			ISOQUINOLINE	T	3.60E 06	2.30E 02	1.32E 05	6
20 A 060*	P		4-NITROPHENOL	T	3.60E 06	2.30E 02	1.32E 05	6
23 B 021*			QUINOLINE	T	3.60E 06	2.30E 02	1.32E 05	6
02 B 120*	P		HEXACHLOROBUTADIENE	T	8.70E 05	2.12E 02	1.30E 05	1
04 A 050*		W	EPICHLORHYDRIN	T	4.10E 05	2.10E 02	1.20E 05	4
04 A 040*		W	2-CHLORO-1,2-EPOXYPROPANE	T	4.10E 05	2.10E 02	1.20E 05	4
04 A 060*		W	1-CHLORO-1,3-EPOXYPROPANE	T	4.10E 05	2.10E 02	1.20E 05	4
12 A 060*	P		N-NITROSODIPROPYLAMINE	T	4.90E 05	2.04E 02	1.20E 05	5
23 A 141*			2,3-DIMETHYLPYRIDINE	T	3.60E 06	2.00E 02	1.20E 05	6
23 A 144*			2,6-DIMETHYLPYRIDINE	T	3.60E 06	2.00E 02	1.20E 05	6
23 A 143*			2,5-DIMETHYLPYRIDINE	T	3.60E 06	2.00E 02	1.20E 05	6
23 A 142*			2,4-DIMETHYLPYRIDINE	T	3.60E 06	2.00E 02	1.20E 05	6
23 A 140*			DISUBSTITUTED POLYSUBSTITUTED ALKYL PYRIDINES	T	3.60E 06	2.00E 02	1.20E 05	6
23 A 145*			3,4-DIMETHYLPYRIDINE	T	3.60E 06	2.00E 02	1.20E 05	6
05 B 100*		W	1-PHENYLETHANOL	T	3.60E 06	2.00E 02	1.20E 05	6
23 A 146*			2,3,4,6-TETRAMETHYL PYRIDINE	T	3.60E 06	2.00E 02	1.20E 05	6
10 C 020*			ANILINE	T	3.60E 06	1.90E 02	1.11E 05	6
18 A 020*	P		PHENOL	T	3.60E 06	1.90E 02	1.11E 05	6
49 A 010	P		ARSENIC	D	3.70E 02	1.90E 02	1.10E 05	
21 C 020*			DIBENZO(A,H)PYRENE	T	6.80E 05	1.63E 02	1.10E 05	3
23 C 020*			PYRROLE	T	4.90E 05	1.81E 02	1.10E 05	5
18 B 020*			CATECHOL	T	3.60E 06	1.80E 02	1.10E 05	6
20 A 040*			3-NITROPHENOL	T	3.60E 06	1.80E 02	1.10E 05	6
02 A 380*		W	HEXACHLOROCYCLOHEXANE	T	8.90E 04	1.60E 02	1.10E 05	2
02 A 160*	P		BROMOFORM	T	8.70E 05	1.74E 02	1.02E 05	1
09 A 120*		W	TETRAMETHYLSUCCINONITRILE	T	4.90E 05	1.63E 02	9.63E 04	5
18 A 100*			PHENYLPHENOLS	T	3.60E 06	1.60E 02	9.23E 04	6
23 B 200*			DIBENZ(C,H)ACRIDINE	T	3.60E 06	1.60E 02	9.23E 04	6
19 B 022*	P		CHLORINATED-M-CRESOLS	T	3.60E 06	1.60E 02	9.23E 04	6
18 A 102*			P-PHENYLPHENOL	T	3.60E 06	1.60E 02	9.23E 04	6
08 A 080*			VALERIC ACID	T	3.60E 06	1.60E 02	9.23E 04	6
19 B 023*			CHLORINATED-P-CRESOLS	T	3.60E 06	1.60E 02	9.23E 04	6

PRODUCT GAS PARTICULATE, HEALTH IMPACT

DMEG NO.		COMPOUND NAME	TYPE	CONC E-6 G/SCM	DS	WDS G/S	LCCAT
19 B 021*		CHLORINATED-O-CRESOLS	T	3.60E 06	1.60E 02	9.23E 04	6
18 A 103*		M-PHENYLPHENOL	T	3.60E 06	1.60E 02	9.23E 04	6
19 B 020*	W	CHLORINATED CRESOLS	T	3.60E 06	1.60E 02	9.23E 04	6
18 A 101*		O-PHENYLPHENOL	T	3.60E 06	1.60E 02	9.23E 04	6
23 C 020*		PYRROLE	T	4.10E 05	1.51E 02	9.00E 04	4
18 A 162*		4-ETHYL-O-CRESOL	T	3.60E 06	1.50E 02	8.90E 04	6
18 A 161*		6-ETHYL-M-CRESOL	T	3.60E 06	1.50E 02	8.90E 04	6
18 A 163*		2-ETHYL-P-CRESOL	T	3.60E 06	1.50E 02	8.90E 04	6
18 A 160*		ETHYL CRESOLS	T	3.60E 06	1.50E 02	8.90E 04	6
08 A 140*		OLEIC ACID	T	4.90E 05	1.50E 02	8.80E 04	5
08 A 040*		ACETIC ACID	T	3.60E 06	1.44E 02	8.50E 04	6
10 C 061*		2,3-XYLIDINE	T	3.60E 06	1.44E 02	8.50E 04	6
07 B 080*	P	ISOPHORONE	T	3.60E 06	1.44E 02	8.50E 04	6
10 C 062*		2,4-XYLIDINE	T	3.60E 06	1.44E 02	8.50E 04	6
10 C 064*		2,6-XYLIDINE	T	3.60E 06	1.44E 02	8.50E 04	6
10 C 063*		2,5-XYLIDINE	T	3.60E 06	1.44E 02	8.50E 04	6
10 A 080*		1,2-DIAMINOETHANE	T	3.60E 06	1.44E 02	8.50E 04	6
10 C 065*		3,4-XYLIDINE	T	3.60E 06	1.44E 02	8.50E 04	6
10 C 066*		3,5-XYLIDINE	T	3.60E 06	1.44E 02	8.50E 04	6
10 D 020*	W	N,N-DIMETHYLANILINE	T	3.60E 06	1.44E 02	8.50E 04	6
10 C 060*		DIMETHYLANILINES	T	3.60E 06	1.44E 02	8.50E 04	6
03 B 020*	W	1,4-DIOXANE	T	4.90E 05	1.40E 02	8.03E 04	5
03 B 040*	W	1,3-DIOXANE	T	4.90E 05	1.40E 02	8.03E 04	5
16 B 020*	W	A-CHLOROTOLUENE	T	6.80E 05	1.40E 02	8.02E 04	5
83 A 010	P	MERCURY	D	6.50E 03	1.30E 02	7.70E 04	
19 A 020*	P	2-CHLOROPHENOL	T	3.60E 06	1.20E 02	7.10E 04	6
08 C 020*		FORMAMIDE	T	3.60E 06	1.20E 02	7.10E 04	6
23 D 020*	W	BENZOTHIAZOLE	T	4.90E 05	1.13E 02	6.72E 04	5
03 B 020*	W	1,4-DIOXANE	T	4.10E 05	1.13E 02	6.71E 04	4
03 B 040*	W	1,3-DIOXANE	T	4.10E 05	1.13E 02	6.71E 04	4
08 A 060*		MALEIC ACID	T	3.60E 06	1.12E 02	6.63E 04	6
18 A 060*		2-METHOXYPHENOL	T	3.60E 06	1.10E 02	6.51E 04	6
22 C 040*		BENZO(J)FLUORANTHENE	T	6.80E 05	1.04E 02	6.20E 04	3
23 D 040*		METHYL BENZOTHIAZOLE	T	4.90E 05	1.04E 02	6.20E 04	5

PRODUCT GAS PARTICULATE, HEALTH IMPACT

DMEG NO.			COMPOUND NAME	TYPE	CONC E-6 G/SCM	DS	WDS G/S	LCCAT
18 A 120*			2,2'-DIHYDROXYDIPHENYL	T	3.60E 06	1.02E 02	6.10E 04	6
10 A 123*			1-AMINO-2-PROPANOL	T	3.60E 06	1.00E 02	5.90E 04	6
18 B 080*			1,2,3-TRIHYDROXYBENZENE	T	3.60E 06	1.00E 02	5.90E 04	6
10 A 122*			3-AMINO-1-PROPANOL	T	3.60E 06	1.00E 02	5.90E 04	6
10 A 121*			2-AMINO-1-PROPANOL	T	3.60E 06	1.00E 02	5.90E 04	6
08 B 080*			Y-BUTYROLACTONE	T	3.60E 06	1.00E 02	5.90E 04	6
10 A 120*			PROPANOLAMINES	T	3.60E 06	1.00E 02	5.90E 04	6
16 B 041*			1,2-BIS(CHLOROMETHYBENZENE	T	3.60E 06	1.00E 02	5.90E 04	6
16 B 040*			BIS(CHLOROMETHYL)BENZENES	T	6.80E 05	9.90E 01	5.81E 04	3
16 B 042*			1,3-BIS(CHLOROMETHYL)BENZENE	T	6.80E 05	9.90E 01	5.81E 04	3
16 B 043*			1,4-BIS(CHLOROMETHYL)BENZENE	T	6.80E 05	9.90E 01	5.81E 04	3
17 A 020*	P		NITROBENZENE	T	6.80E 05	9.90E 01	5.81E 04	3
08 D 283*			DI-N-BUTYL PHTHALATE	T	4.90E 05	9.80E 01	5.80E 04	5
08 D 280*	P	W	PHTHALATE ESTERS (MW:194-279)	T	4.90E 05	9.80E 01	5.80E 04	5
08 D 282*			DIETHYL PHTHALATE	T	4.90E 05	9.80E 01	5.80E 04	5
08 D 281*			DIMETHYL PHTHALATE	T	4.90E 05	9.80E 01	5.80E 04	5
08 D 300*	P		DI-2-ETHYLHEXYL PHTHALATE	T	4.90E 05	9.80E 01	5.80E 04	5
12 A 080*			N-NITROSODIISOPROPYLAMINE	T	4.90E 05	9.80E 01	5.80E 04	5
08 A 140*			OLEIC ACID	T	3.60E 06	9.50E 01	5.60E 04	6
10 A 160*			CYCLOHEXYLAMINE	T	3.00E 05	9.10E 01	5.40E 04	7
06 B 041*			2-HYDROXYBENZOIC ACID	T	3.60E 06	9.00E 01	5.31E 04	6
15 A 160*		W	BIPHENYL	T	3.60E 06	9.00E 01	5.31E 04	6
68 A 010	P		CHROMIUM	T	8.90E 04	8.90E 01	5.30E 04	2
07 B 120*			ACETOPHENONE	S	8.80E 01	8.80E 01	5.20E 04	
02 A 320*	P		HEXACHLOROETHANE	T	3.60E 06	8.80E 01	5.20E 04	6
08 A 100*			SATURATED LONG CHAIN ACIDS (MW:116-201)	T	8.70E 05	8.70E 01	5.13E 04	1
08 A 103*			CAPRIC ACID	I	4.90E 05	8.44E 01	5.00E 04	5
08 A 101*			CAPRUIC ACID	T	4.90E 05	8.44E 01	5.00E 04	5
08 A 104*			LAURIC ACID	T	4.90E 05	8.44E 01	5.00E 04	5
08 A 102*			CAPRYLIC ACID	T	4.90E 05	8.44E 01	5.00E 04	5
23 A 101*			2-CHLOROPYRIDINE	T	4.90E 05	8.44E 01	5.00E 04	5
23 A 102*			3-CHLOROPYRIDINE	T	4.90E 05	8.30E 01	4.90E 04	5
23 A 103*			4-CHLOROPYRIDINE	T	4.90E 05	8.30E 01	4.90E 04	5
23 A 100*		W	CHLOROPYRIDINES	T	4.90E 05	8.30E 01	4.90E 04	5

PRODUCT GAS PARTICULATE, HEALTH IMPACT

DMEG NO.			COMPOUND NAME	TYPE	CONC E-6 G/SCM	DS	MDS G/S	LCCAT
17 A 020*	P		NITROBENZENE	T	4.10E 05	8.20E 01	4.83E 04	4
10 A 060*			ETHANOLAMINE	T	4.90E 05	8.20E 01	4.81E 04	5
23 C 180*			DIBENZO(A,G)CARBAZOLE	T	4.90E 05	8.20E 01	4.81E 04	5
21 D 060*			DIBENZO(A,L)PYRENE	T	8.90E 04	8.10E 01	4.80E 04	2
05 C 040*		W	T-PENTANOL	T	3.60E 06	8.00E 01	4.72E 04	6
18 B 040*			1,3-DIHYDROXYBENZENE	T	3.60E 06	8.00E 01	4.72E 04	6
02 B 104*			TRANS-1,3-DICHLOROPROPENE	T	8.70E 05	7.90E 01	4.70E 04	1
02 B 103*			CIS-1,3-DICHLOROPROPENE	T	8.70E 05	7.90E 01	4.70E 04	1
02 B 100*	P		DICHLOROPROPENES	T	8.70E 05	7.90E 01	4.70E 04	1
15 B 160*			TERPHENYLS	T	6.80E 05	7.60E 01	4.50E 04	3
15 B 163*			P-TERPHENYL	T	6.80E 05	7.60E 01	4.50E 04	3
15 B 162*			M-TERPHENYL	T	6.80E 05	7.60E 01	4.50E 04	3
15 B 161*			O-TERPHENYL	T	6.80E 05	7.60E 01	4.50E 04	3
54 A 010	P		SELENIUM	D	1.50E 04	7.50E 01	4.42E 04	
19 A 040*	P		2,4-DICHLOROPHENOL	T	4.90E 05	7.00E 01	4.13E 04	5
23 A 101*			2-CHLOROPYRIDINE	T	4.10E 05	6.94E 01	4.10E 04	4
23 A 100*		W	CHLOROPYRIDINES	T	4.10E 05	6.94E 01	4.10E 04	4
23 A 103*			4-CHLOROPYRIDINE	T	4.10E 05	6.94E 01	4.10E 04	4
23 A 102*			3-CHLOROPYRIDINE	T	4.10E 05	6.94E 01	4.10E 04	4
21 C 060*			DIBENZ(A,C)ANTHRACENE	T	6.80E 05	6.90E 01	4.10E 04	3
23 C 180*			DIBENZO(A,G)CARBAZOLE	T	4.10E 05	6.83E 01	4.03E 04	4
21 C 080*	P		DIBENZ(A,H)ANTHRACENE	D	6.10E 00	6.60E 01	3.90E 04	3
23 B 062*			2,6-DIMETHYLQUINOLINE	T	3.60E 06	6.54E 01	3.90E 04	6
23 B 061*			2,3-DIMETHYLQUINOLINE	T	3.60E 06	6.54E 01	3.90E 04	6
23 B 063*			2,8-DIMETHYLQUINOLINE	T	3.60E 06	6.54E 01	3.90E 04	6
23 B 067*			1,5-DIMETHYLISOQUINOLINE	T	3.60E 06	6.54E 01	3.90E 04	6
23 B 060*			DIMETHYLQUINOLINES	T	3.60E 06	6.54E 01	3.90E 04	6
23 B 066*			1,3-DIMETHYLISOQUINOLINE	T	3.60E 06	6.54E 01	3.90E 04	6
23 B 040*			2-METHYLQUINOLINE	T	3.60E 06	6.54E 01	3.90E 04	6
05 A 140*		W	BENZYL ALCOHOL	T	3.60E 06	6.54E 01	3.90E 04	6
23 B 065*			6,8-DIMETHYLQUINOLINE	T	3.60E 06	6.54E 01	3.90E 04	6
23 B 064*			3,4-DIMETHYLQUINOLINE	T	3.60E 06	6.54E 01	3.90E 04	6
02 A 180*			DIBROMODICHLOROMETHANE	T	8.90E 04	6.40E 01	3.80E 04	2
20 A 020*	P		2-NITROPHENOL	T	3.60E 06	6.20E 01	3.70E 04	6

PRODUCT GAS PARTICULATE, HEALTH IMPACT

DMEG NO.		COMPOUND NAME	TYPE	CONC E-6 G/SCM	DS	MDS G/S	LCCAT
18 A 181*		2,4,6-TRIMETHYL METHYL PHENOL	T	3.60E 06	6.10E 01	3.60E 04	6
18 A 180*		POLYALKYLPHENOLS (MW>135)	T	3.60E 06	6.10E 01	3.60E 04	6
18 A 183*		2,6-DIMETHYL-4-HEPTYL PHENOL	T	3.60E 06	6.10E 01	3.60E 04	6
18 A 182*		4,6-DI-TERT-BUTYL-M-CRESOL	T	3.60E 06	6.10E 01	3.60E 04	6
08 D 160*		METHYL BENZOATE	T	3.60E 06	5.90E 01	3.50E 04	6
16 A 161*		1,2,4-TRICHLOROBENZENE	T	6.80E 05	5.70E 01	3.34E 04	3
16 A 160*	P	POLYCHLORINATED BENZENES	T	6.80E 05	5.70E 01	3.34E 04	3
16 A 162*		HEXACHLOROBENZENE	T	6.80E 05	5.70E 01	3.34E 04	3
22 D 020*	P W	INDENO(1,2,3-CD)PYRENE	T	8.90E 04	5.60E 01	3.30E 04	2
22 C 020*	P	BENZO(K)FLUORANTHENE	T	8.90E 04	5.60E 01	3.30E 04	2
21 A 180*	P W	PHENANTHRENE	T	8.90E 04	5.60E 01	3.30E 04	2
23 A 083*		4-PHENYLPYRIDINE	T	3.60E 06	5.21E 01	3.10E 04	6
23 A 120*		COLLIDINES	T	3.60E 06	5.21E 01	3.10E 04	6
23 A 081*		2-PHENYLPYRIDINE	T	3.60E 06	5.21E 01	3.10E 04	6
23 A 121*		5-ETHYL-2-METHYLPYRIDINE	T	3.60E 06	5.21E 01	3.10E 04	6
23 A 062*		3-ETHYLPYRIDINE	T	3.60E 06	5.21E 01	3.10E 04	6
23 A 082*		3-PHENYLPYRIDINE	T	3.60E 06	5.21E 01	3.10E 04	6
23 A 080*		PHENYLPYRIDINES	T	3.60E 06	5.21E 01	3.10E 04	6
23 A 061*		2-ETHYLPYRIDINE	T	3.60E 06	5.21E 01	3.10E 04	6
23 A 060*		MONOSUBSTITUTED ALKYL PYRIDINES	T	3.60E 06	5.21E 01	3.10E 04	6
23 A 063*		4-ETHYLPYRIDINE	T	3.60E 06	5.21E 01	3.10E 04	6
23 A 064*		4-N-PROPYLPYRIDINE	T	3.60E 06	5.21E 01	3.10E 04	6
23 A 122*		2,4,6-COLLIDINE	T	3.60E 06	5.21E 01	3.10E 04	6
08 A 104*		LAURIC ACID	T	3.00E 05	5.20E 01	3.10E 04	7
08 A 100*		SATURATED LONG CHAIN ACIDS (MW:116-201)	T	3.00E 05	5.20E 01	3.10E 04	7
08 A 102*		CAPRYLIC ACID	T	3.00E 05	5.20E 01	3.10E 04	7
08 A 101*		CAPROIC ACID	T	3.00E 05	5.20E 01	3.10E 04	7
08 A 103*		CAPRIC ACID	T	3.00E 05	5.20E 01	3.10E 04	7
10 B 100*		MORPHOLINE	T	3.60E 06	5.14E 01	3.03E 04	6
08 D 200*		DIETHYL ADIPATE	T	3.60E 06	5.00E 01	3.00E 04	6
21 B 140*		METHYL CHRYSENES	T	8.90E 04	4.94E 01	2.91E 04	2
21 B 141*		4-METHYL CHRYSENE	T	8.90E 04	4.94E 01	2.91E 04	2
21 B 142*		5-METHYL CHRYSENE	T	8.90E 04	4.94E 01	2.91E 04	2
18 A 043*		P-CRESOL	T	4.90E 05	4.90E 01	2.90E 04	5

PRODUCT GAS PARTICULATE, HEALTH IMPACT

OMEG NO.			COMPOUND NAME	TYPE	CONC E-6 G/SCM	DS	WDS G/S	LCCAT
18 A 083*			P-ETHYLPHENOL	T	4.90E 05	4.90E 01	2.90E 04	5
18 A 041*			M-CRESOL	T	4.90E 05	4.90E 01	2.90E 04	5
18 A 040*		W	CRESOLS	T	4.90E 05	4.90E 01	2.90E 04	5
06 A 020*		W	ETHYLENE GLYCOL	T	4.90E 05	4.90E 01	2.90E 04	5
18 A 080*		W	ETHYLPHENOLS	T	4.90E 05	4.90E 01	2.90E 04	5
18 A 081*			O-ETHYLPHENOL	T	4.90E 05	4.90E 01	2.90E 04	5
18 A 042*			O-CRESOL	T	4.90E 05	4.90E 01	2.90E 04	5
18 A 082*			M-ETHYLPHENOL	T	4.90E 05	4.90E 01	2.90E 04	5
07 B 180*			CARVONES	T	4.90E 05	4.90E 01	2.90E 04	5
07 B 182*			DIHYDRO-(D OR L)CARVONE	T	3.60E 06	4.90E 01	2.90E 04	6
07 B 181*			CARVONE(D OR L)	T	3.60E 06	4.90E 01	2.90E 04	6
12 A 100*			N-NITROSODIPENTYLAMINE	T	3.60E 06	4.90E 01	2.90E 04	6
04 A 140*		P	2-CHLOROETHYL VINYL ETHER	T	3.60E 06	4.60E 01	2.70E 04	6
23 C 040*			INDOLE	T	4.90E 05	4.50E 01	2.62E 04	5
23 B 200*			BENZ(C)ACRIDINE	T	4.90E 05	4.50E 01	2.62E 04	5
04 B 100*			2,2'-DICHLORODIISOPROPYL ETHER	T	4.90E 05	4.50E 01	2.62E 04	5
15 B 060*		W	4,4'-DIPHENYLBIPHENYL	T	4.90E 05	4.50E 01	2.62E 04	5
05 A 160*			PHENETHYL ALCOHOL	T	8.90E 04	4.50E 01	2.62E 04	2
21 C 040*			BENZO(G)CHRYSENE	T	3.60E 06	4.44E 01	2.62E 04	6
07 B 100*		W	CAMPHOR	T	6.80E 05	4.30E 01	2.50E 04	3
23 C 140*			DIBENZO(A,I)CARBAZOLE	T	4.90E 05	4.10E 01	2.40E 04	5
21 B 120*		P	CHRYSENE	T	4.90E 05	4.10E 01	2.40E 04	5
13 B 080*			METHYL DISULFIDE	T	8.90E 04	4.04E 01	2.40E 04	2
05 B 120*			BORNEOL	T	3.60E 06	4.00E 01	2.40E 04	6
23 B 160*			BENZO(H)QUINOLINE	T	3.60E 06	4.00E 01	2.40E 04	6
23 B 120*			PHENANTHRIDINE	T	3.60E 06	4.00E 01	2.40E 04	6
23 B 080*			ACRIDINE	T	3.60E 06	4.00E 01	2.40E 04	6
23 B 140*			BENZO(F)QUINOLINE	T	3.60E 06	4.00E 01	2.40E 04	6
21 B 040*		P	BENZ(A)ANTHRACENE	T	3.60E 06	4.00E 01	2.40E 04	6
18 A 143*			2,5-XYLENOL	D	1.70E 03	3.80E 01	2.22E 04	3
18 A 142*		P	2,4-XYLENOL	T	4.90E 05	3.80E 01	2.22E 04	5
18 A 141*			2,3-XYLENOL	T	4.90E 05	3.80E 01	2.22E 04	5
18 A 145*			3,5-XYLENOL	T	4.90E 05	3.80E 01	2.22E 04	5
18 A 140*			XYLENOLS	T	4.90E 05	3.80E 01	2.22E 04	5

PRODUCT GAS PARTICULATE, HEALTH IMPACT

DMEG NO.		COMPOUND NAME	TYPE	CONC E-6 G/SCM	DS	WDS G/S	LCCAT
18 A 146*		3,4-XYLENOL	T	4.90E 05	3.80E 01	2.22E 04	5
18 A 144*		2,6-XYLENOL	T	4.90E 05	3.80E 01	2.22E 04	5
13 B 060*		DIPHENYL SULFIDE	T	3.60E 06	3.80E 01	2.21E 04	6
04 B 100*		2,2'-DICHLORODIISOPROPYL ETHER	T	4.10E 05	3.72E 01	2.20E 04	4
23 C 040*		INDOLE	T	4.10E 05	3.72E 01	2.20E 04	4
04 A 140*	P	2-CHLOROETHYL VINYL ETHER	T	4.10E 05	3.72E 01	2.20E 04	4
21 C 160*		PICENE	T	8.90E 04	3.60E 01	2.10E 04	2
08 D 080*		METHYL METHACRYLATE	T	4.90E 05	3.50E 01	2.10E 04	5
23 C 140*		DIBENZO(A,I)CARBAZOLE	T	4.10E 05	3.41E 01	2.01E 04	4
72 A 010		IRON (AS FE+2)	D	< 5.30E 04<	5.30E 01<	1.94E 04	
18 C 040*	W	2-NAPHTHOL	T	3.60E 06	3.30E 01	1.93E 04	6
23 A 020*		PYRIDINE	T	4.90E 05	3.30E 01	1.92E 04	5
48 A 010		PHOSPHORUS	S	> 3.20E 03>	3.20E 01>	1.90E 04	
23 B 021*		QUINOLINE	T	4.90E 05	3.10E 01	1.80E 04	5
23 B 020*		QUINOLINES	T	4.90E 05	3.10E 01	1.80E 04	5
20 A 060*	P	4-NITROPHENOL	T	4.90E 05	3.10E 01	1.80E 04	5
23 B 022*		ISOQUINOLINE	T	4.90E 05	3.10E 01	1.80E 04	5
18 C 020*		1-NAPHTHOL	T	3.60E 06	3.00E 01	1.80E 04	6
21 C 120*		BENZO(E)PYRENE	T	8.90E 04	3.00E 01	1.80E 04	2
01 B 220	W	DICYCLOPENTADIENE	T	8.70E 05	2.90E 01	1.71E 04	1
23 A 020*		PYRIDINE	T	4.10E 05	2.73E 01	1.61E 04	4
23 A 143*		2,5-DIMETHYLPYRIDINE	T	4.90E 05	2.72E 01	1.60E 04	5
23 A 140*		DISUBSTITUTED POLYSUBSTITUTED ALKYL PYRIDINES	T	4.90E 05	2.72E 01	1.60E 04	5
23 A 144*		2,6-DIMETHYLPYRIDINE	T	4.90E 05	2.72E 01	1.60E 04	5
23 A 145*		3,4-DIMETHYLPYRIDINE	T	4.90E 05	2.72E 01	1.60E 04	5
23 A 141*		2,3-DIMETHYLPYRIDINE	T	4.90E 05	2.72E 01	1.60E 04	5
23 A 142*		2,4-DIMETHYLPYRIDINE	T	4.90E 05	2.72E 01	1.60E 04	5
23 A 146*		2,3,4,6-TETRAMETHYL PYRIDINE	T	4.90E 05	2.72E 01	1.60E 04	5
05 B 100*	W	1-PHENYLETHANOL	T	4.90E 05	2.72E 01	1.60E 04	5
82 A 010	P	CADMIUM	D	2.70E 02	2.70E 01	1.60E 04	
18 A 020*	P	PHENOL	T	4.90E 05	2.60E 01	1.52E 04	5
23 C 120*		BENZO(A)CARBAZOLE	T	4.90E 05	2.60E 01	1.52E 04	5
10 C 020*		ANILINE	T	4.90E 05	2.60E 01	1.52E 04	5
08 D 320*	P	BUTYL BENZYL PHTHALATE	T	3.60E 06	2.60E 01	1.51E 04	6

PRODUCT GAS PARTICULATE, HEALTH IMPACT

DMEG NO.		COMPOUND NAME	TYPE	CONC E-6 G/SCM	DS	WDS G/S	LCCAT
08 A 160*		BENZOIC ACID	T	3.60E 06	2.60E 01	1.51E 04	6
18 B 020*		CATECHOL	T	4.90E 05	2.50E 01	1.44E 04	5
20 A 040*		3-NITROPHENOL	T	4.90E 05	2.50E 01	1.44E 04	5
21 D 020*		DIBENZO(A,H)PYRENE	T	8.90E 04	2.40E 01	1.41E 04	2
18 C 082*		4-INDANOL	T	3.60E 06	2.40E 01	1.41E 04	6
18 C 083*		5-INDANOL	T	3.60E 06	2.40E 01	1.41E 04	6
18 C 080*		INDANOLS	T	3.60E 06	2.40E 01	1.41E 04	6
05 A 080*		N-BUTANOL	T	3.60E 06	2.40E 01	1.41E 04	6
18 C 081*		1-INDANOL	T	3.60E 06	2.40E 01	1.41E 04	6
05 A 100*		ISOBUTYL ALCOHOL	T	3.60E 06	2.40E 01	1.41E 04	6
23 A 140*		DISUBSTITUTED POLYSUBSTITUTED ALKYL PYRIDINES	T	4.10E 05	2.30E 01	1.34E 04	4
23 A 141*		2,3-DIMETHYLPYRIDINE	T	4.10E 05	2.30E 01	1.34E 04	4
23 A 144*		2,6-DIMETHYLPYRIDINE	T	4.10E 05	2.30E 01	1.34E 04	4
23 A 142*		2,4-DIMETHYLPYRIDINE	T	4.10E 05	2.30E 01	1.34E 04	4
23 A 146*		2,3,4,6-TETRAMETHYL PYRIDINE	T	4.10E 05	2.30E 01	1.34E 04	4
23 A 143*		2,5-DIMETHYLPYRIDINE	T	4.10E 05	2.30E 01	1.34E 04	4
23 A 145*		3,4-DIMETHYLPYRIDINE	T	4.10E 05	2.30E 01	1.34E 04	4
05 B 080*		2,6-DIMETHYL-4-HEPTANOL	T	3.60E 06	2.30E 01	1.32E 04	6
08 A 180*		ADIPIC ACID	T	3.60E 06	2.30E 01	1.32E 04	6
09 A 100*		1,3-DICYANO-1-HYDROXYBUTANE	T	4.90E 05	2.22E 01	1.31E 04	5
02 B 120*	P	HEXACHLOROBUTADIENE	T	8.90E 04	2.20E 01	1.30E 04	2
23 C 120*		BENZO(A)CARBAZOLE	T	4.10E 05	2.20E 01	1.30E 04	4
25 A 040*		METHYLTHIOPHENES	T	4.90E 05	2.13E 01	1.30E 04	5
25 A 041*		2-METHYLTHIOPHENE	T	4.90E 05	2.13E 01	1.30E 04	5
18 A 103*		M-PHENYLPHENOL	T	4.90E 05	2.13E 01	1.30E 04	5
23 C 102*		9-METHYLCARBAZOLE	T	4.90E 05	2.13E 01	1.30E 04	5
19 B 020*	W	CHLORINATED CRESOLS	T	4.90E 05	2.13E 01	1.30E 04	5
18 A 101*		O-PHENYLPHENOL	T	4.90E 05	2.13E 01	1.30E 04	5
19 B 023*		CHLORINATED-P-CRESOLS	T	4.90E 05	2.13E 01	1.30E 04	5
19 B 022*	P	CHLORINATED-M-CRESOLS	T	4.90E 05	2.13E 01	1.30E 04	5
25 A 042*		3-METHYLTHIOPHENE	T	4.90E 05	2.13E 01	1.30E 04	5
23 C 100*		METHYLCARBAZOLES	T	4.90E 05	2.13E 01	1.30E 04	5
09 A 080*		BUTYRONITRILE	T	4.90E 05	2.13E 01	1.30E 04	5
18 A 102*		P-PHENYLPHENOL	T	4.90E 05	2.13E 01	1.30E 04	5

PRODUCT GAS PARTICULATE, HEALTH IMPACT

DMEG NO.			COMPOUND NAME	TYPE	CONC E-6 G/SCM	DS	WDS G/S	LCCAT
23 C 101*			3-METHYLCARBAZOLE	T	4.90E 05	2.13E 01	1.30E 04	5
23 B 260*			DIBENZ(C,H)ACRIDINE	T	4.90E 05	2.13E 01	1.30E 04	5
18 A 100*			PHENYLPHENOLS	T	4.90E 05	2.13E 01	1.30E 04	5
19 B 021*			CHLORINATED-O-CRESOLS	T	4.90E 05	2.13E 01	1.30E 04	5
08 A 080*			VALERIC ACID	T	4.90E 05	2.13E 01	1.30E 04	5
23 C 080*			CARBAZOLE	T	4.90E 05	2.13E 01	1.30E 04	5
25 B 040*		W	BENZO(B)THIOPHENE	T	4.90E 05	2.13E 01	1.30E 04	5
18 A 162*			4-ETHYL-O-CRESOL	T	4.90E 05	2.04E 01	1.20E 04	5
18 A 163*			2-ETHYL-P-CRESOL	T	4.90E 05	2.04E 01	1.20E 04	5
18 A 161*			6-ETHYL-M-CRESOL	T	4.90E 05	2.04E 01	1.20E 04	5
18 A 160*			ETHYL CRESOLS	T	4.90E 05	2.04E 01	1.20E 04	5
08 A 040*			ACETIC ACID	T	4.90E 05	2.00E 01	1.20E 04	5
10 C 064*			2,6-XYLIDINE	T	4.90E 05	2.00E 01	1.20E 04	5
10 A 080*			1,2-DIAMINOETHANE	T	4.90E 05	2.00E 01	1.20E 04	5
07 B 080*	P		ISOPHORONE	T	4.90E 05	2.00E 01	1.20E 04	5
10 D 020*		W	N,N-DIMETHYLANILINE	T	4.90E 05	2.00E 01	1.20E 04	5
10 C 065*			3,4-XYLIDINE	T	4.90E 05	2.00E 01	1.20E 04	5
10 C 063*			2,5-XYLIDINE	T	4.90E 05	2.00E 01	1.20E 04	5
10 C 060*			DIMETHYLANILINES	T	4.90E 05	2.00E 01	1.20E 04	5
10 C 062*			2,4-XYLIDINE	T	4.90E 05	2.00E 01	1.20E 04	5
10 C 061*			2,3-XYLIDINE	T	4.90E 05	2.00E 01	1.20E 04	5
10 C 066*			3,5-XYLIDINE	T	4.90E 05	2.00E 01	1.20E 04	5
02 A 140*	P		DIBROMOCHLOROMETHANE	T	6.70E 05	1.93E 01	1.14E 04	1
05 C 060*			A-TERPINEOL	T	3.60E 06	1.90E 01	1.11E 04	6
25 A 060*			DIMETHYLTHIOPHENES	T	4.90E 05	1.90E 01	1.11E 04	5
25 A 064*			3,4-DIMETHYLTHIOPHENE	T	4.90E 05	1.90E 01	1.11E 04	5
25 A 063*			2,5-DIMETHYLTHIOPHENE	T	4.90E 05	1.90E 01	1.11E 04	5
25 A 062*			2,4-DIMETHYLTHIOPHENE	T	4.90E 05	1.90E 01	1.11E 04	5
25 A 061*			2,3-DIMETHYLTHIOPHENE	T	4.90E 05	1.90E 01	1.11E 04	5
09 A 100*			1,3-DICYANO-1-HYDROXYBUTANE	T	4.10E 05	1.90E 01	1.10E 04	4
04 A 180*	P		CHLOROPHENYL PHENYL ETHER	T	4.90E 05	1.81E 01	1.10E 04	5
04 A 200*			4-BROMOPHENYL PHENYL ETHER	T	4.90E 05	1.81E 01	1.10E 04	5
23 C 101*			3-METHYLCARBAZOLE	T	4.10E 05	1.80E 01	1.10E 04	4
23 C 102*			9-METHYLCARBAZOLE	T	4.10E 05	1.80E 01	1.10E 04	4

PRODUCT GAS PARTICULATE, HEALTH IMPACT

OMEG NO.			COMPOUND NAME	TYPE	CONC E-6 G/SCM	US	WDS G/S	LCCAT
23 C 080*			CARBAZOLE	T	4.10E 05	1.80E 01	1.10E 04	4
25 A 041*			2-METHYLTHIOPHENE	T	4.10E 05	1.80E 01	1.10E 04	4
23 C 100*			METHYLCARBAZOLES	T	4.10E 05	1.80E 01	1.10E 04	4
09 A 080*			BUTYRONITRILE	T	4.10E 05	1.80E 01	1.10E 04	4
25 A 042*			3-METHYLTHIOPHENE	T	4.10E 05	1.80E 01	1.10E 04	4
25 A 040*			METHYLTHIOPHENES	T	4.10E 05	1.80E 01	1.10E 04	4
02 A 160*	P		BROMOFORM	T	8.90E 04	1.80E 01	1.10E 04	2
16 B 020*		W	A-CHLOROTOLUENE	T	8.90E 04	1.80E 01	1.10E 04	2
25 A 080*			TRIMETHYL AND TETRAMETHYL THIOPHENES	T	4.90E 05	1.70E 01	1.00E 04	5
25 A 081*			2,3,5-TRIMETHYLTHIOPHENE	T	4.90E 05	1.70E 01	1.00E 04	5
04 B 040*	P		1,1'-DICHLORODIETHYL ETHER	T	4.90E 05	1.63E 01	9.63E 03	5
17 A 042*			3-NITROTOLUENE	T	4.90E 05	1.63E 01	9.63E 03	5
17 A 040*			NITROTOLUENES	T	4.90E 05	1.63E 01	9.63E 03	5
17 A 041*			2-NITROTOLUENE	T	4.90E 05	1.63E 01	9.63E 03	5
04 B 080*			2,2'-DICHLORODIETHYL ETHER	T	4.90E 05	1.63E 01	9.63E 03	5
19 A 020*	P		2-CHLOROPHENOL	T	4.90E 05	1.63E 01	9.63E 03	5
17 A 043*			4-NITROTOLUENE	T	4.90E 05	1.63E 01	9.63E 03	5
08 C 020*			FORMAMIDE	T	4.90E 05	1.63E 01	9.63E 03	5
25 A 060*			DIMETHYLTHIOPHENES	T	4.10E 05	1.60E 01	9.30E 03	4
25 A 063*			2,5-DIMETHYLTHIOPHENE	T	4.10E 05	1.60E 01	9.30E 03	4
25 A 064*			3,4-DIMETHYLTHIOPHENE	T	4.10E 05	1.60E 01	9.30E 03	4
25 A 062*			2,4-DIMETHYLTHIOPHENE	T	4.10E 05	1.60E 01	9.30E 03	4
25 A 061*			2,3-DIMETHYLTHIOPHENE	T	4.10E 05	1.60E 01	9.30E 03	4
02 A 361*			1-BROMOBUTANE	T	8.70E 05	1.60E 01	9.20E 03	1
02 A 360*			BROMOBUTANES	T	8.70E 05	1.60E 01	9.20E 03	1
09 B 042*			B-NAPHTHONITRILES	T	4.90E 05	1.53E 01	9.03E 03	5
09 B 040*		W	NAPHTHONITRILES	T	4.90E 05	1.53E 01	9.03E 03	5
08 A 060*			MALEIC ACID	T	4.90E 05	1.53E 01	9.03E 03	5
09 B 041*			A-NAPHTHONITRILES	T	4.90E 05	1.53E 01	9.03E 03	5
09 B 020*		W	BENZONITRILE	T	4.90E 05	1.53E 01	9.03E 03	5
36 A 010			BARIUM	D	7.60E 03	1.52E 01	9.00E 03	
04 A 200*			4-BROMOPHENYL PHENYL ETHER	T	4.10E 05	1.51E 01	9.00E 03	4
04 A 180*	P		CHLOROPHENYL PHENYL ETHER	T	4.10E 05	1.51E 01	9.00E 03	4
22 A 010*		W	INDENE	T	6.80E 05	1.51E 01	8.91E 03	3

PRODUCT GAS PARTICULATE, HEALTH IMPACT

DMEG NO.		COMPOUND NAME	TYPE	CONC E-6 G/SCM	DS	WDS G/S	LCCAT
18 A 060*		2-METHOXYPHENOL	T	4.90E 05	1.50E 01	8.90E 03	5
08 D 240*		DI-2-ETHYLBUTYL ADIPATE	T	3.60E 06	1.44E 01	8.50E 03	6
25 A 081*		2,3,5-TRIMETHYLTHIOPHENE	T	4.10E 05	1.41E 01	8.34E 03	4
25 A 080*		TRIMETHYL AND TETRAMETHYL THIOPHENES	T	4.10E 05	1.41E 01	8.34E 03	4
18 A 120*		2,2'-DIHYDROXYDIPHENYL	T	4.90E 05	1.40E 01	8.30E 03	5
22 C 040*		BENZO(J)FLUORANTHENE	T	8.90E 04	1.40E 01	8.10E 03	2
04 B 040*	P	1,1'-DICHLORODIETHYL ETHER	T	4.10E 05	1.40E 01	8.10E 03	4
17 A 042*		3-NITROTOLUENE	T	4.10E 05	1.40E 01	8.10E 03	4
17 A 043*		4-NITROTOLUENE	T	4.10E 05	1.40E 01	8.10E 03	4
17 A 040*		NITROTOLUENES	T	4.10E 05	1.40E 01	8.10E 03	4
17 A 041*		2-NITROTOLUENE	T	4.10E 05	1.40E 01	8.10E 03	4
04 B 080*		2,2'-DICHLORODIETHYL ETHER	T	4.10E 05	1.40E 01	8.10E 03	4
18 B 080*		1,2,3-TRIHYDROXYBENZENE	T	4.90E 05	1.40E 01	8.03E 03	5
10 A 122*		3-AMINO-1-PROPANOL	T	4.90E 05	1.40E 01	8.03E 03	5
10 A 121*		2-AMINO-1-PROPANOL	T	4.90E 05	1.40E 01	8.03E 03	5
08 B 080*		Y-BUTYROLACTONE	T	4.90E 05	1.40E 01	8.03E 03	5
10 A 120*		PROPANOLAMINES	T	4.90E 05	1.40E 01	8.03E 03	5
10 A 123*		1-AMINO-2-PROPANOL	T	4.90E 05	1.40E 01	8.03E 03	5
21 A 020*	P	NAPHTHALENE	T	6.80E 05	1.40E 01	8.02E 03	3
08 A 080*		VALERIC ACID	T	3.00E 05	1.30E 01	7.70E 03	7
16 B 041*		1,2-BIS(CHLOROMETHYBENZENE	T	8.90E 04	1.30E 01	7.61E 03	2
16 B 042*		1,3-BIS(CHLOROMETHYL)BENZENE	T	8.90E 04	1.30E 01	7.61E 03	2
16 B 040*		BIS(CHLOROMETHYL)BENZENES	T	8.90E 04	1.30E 01	7.61E 03	2
16 B 043*		1,4-BIS(CHLOROMETHYL)BENZENE	T	8.90E 04	1.30E 01	7.61E 03	2
12 A 080*		N-NITROSODIISOPROPYLAMINE	T	4.90E 05	1.30E 01	7.60E 03	5
09 B 040*	W	NAPHTHONITRILES	T	4.10E 05	1.30E 01	7.60E 03	4
09 B 041*		A-NAPHTHONITRILES	T	4.10E 05	1.30E 01	7.60E 03	4
09 B 042*		B-NAPHTHONITRILES	T	4.10E 05	1.30E 01	7.60E 03	4
10 A 160*		CYCLOHEXYLAMINE	T	4.90E 05	1.22E 01	7.22E 03	5
08 B 041*		2-HYDROXYBENZOIC ACID	T	4.90E 05	1.22E 01	7.22E 03	5
21 A 140*	P	ANTHRACENE	T	6.80E 05	1.21E 01	7.20E 03	3
08 A 040*		ACETIC ACID	T	3.00E 05	1.20E 01	7.10E 03	7
07 B 120*		ACETOPHENONE	T	4.90E 05	1.20E 01	7.10E 03	5
79 A 010	P	SILVER	S	1.10E 02	1.10E 01	6.50E 03	

PRODUCT GAS PARTICULATE, HEALTH IMPACT

DMEG NO.		COMPOUND NAME	TYPE	CONC E-6 G/SCM	DS	WDS G/S	LCCAT
05 C 040*	W	T-PENTANOL	T	4.90E 05	1.10E 01	6.42E 03	5
23 C 061*		2-METHYLINDOLE	T	4.90E 05	1.10E 01	6.42E 03	5
18 B 040*		1,3-DIHYDROXYBENZENE	T	4.90E 05	1.10E 01	6.42E 03	5
23 C 060*		METHYLINDOLES	T	4.90E 05	1.10E 01	6.42E 03	5
05 A 124*		3-METHYL-1-BUTANOL	T	3.60E 06	1.00E 01	5.90E 03	6
05 A 123*		2,2-DIMETHYL-1-PROPANOL	T	3.60E 06	1.00E 01	5.90E 03	6
05 B 060*		PENTANOLS (SECONDARY)	T	3.60E 06	1.00E 01	5.90E 03	6
05 B 061*		2-PENTANOL	T	3.60E 06	1.00E 01	5.90E 03	6
23 A 043*		4-METHYLPYRIDINE	T	3.60E 06	1.00E 01	5.90E 03	6
05 B 062*		3-PENTANOL	T	3.60E 06	1.00E 01	5.90E 03	6
05 A 121*		N-PENTANOL	T	3.60E 06	1.00E 01	5.90E 03	6
05 B 063*		3-METHYL-2-BUTANOL	T	3.60E 06	1.00E 01	5.90E 03	6
05 A 120*		PENTANOLS (PRIMARY)	T	3.60E 06	1.00E 01	5.90E 03	6
23 A 041*		2-METHYLPYRIDINE	T	3.60E 06	1.00E 01	5.90E 03	6
23 A 042*		3-METHYLPYRIDINE	T	3.60E 06	1.00E 01	5.90E 03	6
05 A 122*		2-METHYL-1-BUTANOL	T	3.60E 06	1.00E 01	5.90E 03	6
15 B 161*		O-TERPHENYL	T	8.90E 04	9.90E 00	5.83E 03	2
15 B 160*		TERPHENYLS	T	8.90E 04	9.90E 00	5.83E 03	2
15 B 163*		P-TERPHENYL	T	8.90E 04	9.90E 00	5.83E 03	2
15 B 162*		M-TERPHENYL	T	8.90E 04	9.90E 00	5.83E 03	2
16 A 201*		1-CHLORONAPHTHALENE	T	6.80E 05	9.90E 00	5.81E 03	3
16 A 202*		2-CHLORONAPHTHALENE	T	6.80E 05	9.90E 00	5.81E 03	3
16 A 200*	P	CHLORONAPHTHALENES	T	6.80E 05	9.90E 00	5.81E 03	3
34 A 010		CALCIUM (AS CA+2)	D	1.50E 05	9.40E 00	5.55E 03	
08 A 060*		MALEIC ACID	T	3.00E 05	9.40E 00	5.53E 03	7
23 C 060*		METHYLINDOLES	T	4.10E 05	9.11E 00	5.40E 03	4
23 C 061*		2-METHYLINDOLE	T	4.10E 05	9.11E 00	5.40E 03	4
21 C 060*		DIBENZ(A,C)ANTHRACENE	T	8.90E 04	9.00E 00	5.30E 03	2
23 B 062*		2,6-DIMETHYLQUINOLINE	T	4.90E 05	8.90E 00	5.30E 03	5
23 B 066*		1,3-DIMETHYLISOQUINOLINE	T	4.90E 05	8.90E 00	5.30E 03	5
23 B 040*		2-METHYLQUINOLINE	T	4.90E 05	8.90E 00	5.30E 03	5
23 B 061*		2,3-DIMETHYLQUINOLINE	T	4.90E 05	8.90E 00	5.30E 03	5
05 A 140*	W	BENZYL ALCOHOL	T	4.90E 05	8.90E 00	5.30E 03	5
23 B 064*		3,4-DIMETHYLQUINOLINE	T	4.90E 05	8.90E 00	5.30E 03	5

PRODUCT GAS PARTICULATE, HEALTH IMPACT

DMEG NO.		COMPOUND NAME	TYPE	CONC E-6 G/SCM	DS	WDS G/S	LCCAT
23 B 067*		1,5-DIMETHYLISOQUINOLINE	T	4.90E 05	8.90E 00	5.30E 03	5
23 B 060*		DIMETHYLQUINOLINES	T	4.90E 05	8.90E 00	5.30E 03	5
23 B 065*		6,8-DIMETHYLQUINOLINE	T	4.90E 05	8.90E 00	5.30E 03	5
23 B 063*		2,8-DIMETHYLQUINOLINE	T	4.90E 05	8.90E 00	5.30E 03	5
02 A 320*	P	HEXACHLOROETHANE	T	8.90E 04	8.90E 00	5.30E 03	2
08 D 260*		DI-2-ETHYLHEXYL ADIPATE	T	3.60E 06	8.80E 00	5.20E 03	6
20 A 020*	P	2-NITROPHENOL	T	4.90E 05	8.44E 00	5.00E 03	5
26 A 020	W	TRIETHYL PHOSPHATE	T	3.00E 05	8.33E 00	4.91E 03	7
08 B 080*		Y-BUTYROLACTONE	T	3.00E 05	8.33E 00	4.91E 03	7
18 A 180*		POLYALKYLPHENOLS (MW>135)	T	4.90E 05	8.30E 00	4.90E 03	5
18 A 183*		2,6-DIMETHYL-4-HEPTYL PHENOL	T	4.90E 05	8.30E 00	4.90E 03	5
07 A 140*		BENZALDEHYDE	T	4.90E 05	8.30E 00	4.90E 03	5
18 A 182*		4,6-DI-TERT-BUTYL-M-CRESOL	T	4.90E 05	8.30E 00	4.90E 03	5
18 A 181*		2,4,6-TRIMETHYL METHYL PHENOL	T	4.90E 05	8.30E 00	4.90E 03	5
02 B 100*	P	DICHLOROPROPENES	T	8.90E 04	8.10E 00	4.80E 03	2
02 B 104*		TRANS-1,3-DICHLOROPROPENE	T	8.90E 04	8.10E 00	4.80E 03	2
02 B 103*		CIS-1,3-DICHLOROPROPENE	T	8.90E 04	8.10E 00	4.80E 03	2
08 D 160*		METHYL BENZOATE	T	4.90E 05	8.03E 00	4.73E 03	5
16 A 220*	W	POLYCHLORINATED BIPHENYLS	D	< 7.60E 00<	7.60E 00<	4.50E 03	2
22 B 040*	P W	FLUORANTHENE	T	6.80E 05	7.60E 00	4.50E 03	3
08 B 041*		2-HYDROXYBENZOIC ACID	T	3.00E 05	7.50E 00	4.42E 03	7
14 A 020	W	BENZENESULFONIC ACID	T	3.00E 05	7.50E 00	4.42E 03	7
16 A 160*	P	POLYCHLORINATED BENZENES	T	8.90E 04	7.41E 00	4.40E 03	2
16 A 162*		HEXACHLOROBENZENE	T	8.90E 04	7.41E 00	4.40E 03	2
16 A 161*		1,2,4-TRICHLOROBENZENE	T	8.90E 04	7.41E 00	4.40E 03	2
7b A 010	P	NICKEL	S	1.10E 02	7.33E 00	4.32E 03	
23 A 064*		4-N-PROPYLPYRIDINE	T	4.90E 05	7.10E 00	4.20E 03	5
23 A 063*		4-ETHYLPYRIDINE	T	4.90E 05	7.10E 00	4.20E 03	5
23 A 121*		5-ETHYL-2-METHYLPYRIDINE	T	4.90E 05	7.10E 00	4.20E 03	5
23 A 082*		3-PHENYLPYRIDINE	T	4.90E 05	7.10E 00	4.20E 03	5
23 A 120*		COLLIDINES	T	4.90E 05	7.10E 00	4.20E 03	5
23 A 080*		PHENYLPYRIDINES	T	4.90E 05	7.10E 00	4.20E 03	5
23 A 060*		MONOSUBSTITUTED ALKYL PYRIDINES	T	4.90E 05	7.10E 00	4.20E 03	5
23 A 061*		2-ETHYLPYRIDINE	T	4.90E 05	7.10E 00	4.20E 03	5

PRODUCT GAS PARTICULATE, HEALTH IMPACT

DMEG NO.	COMPOUND NAME	TYPE	CONC E-6 G/SCM	DS	WDS G/S	LCCAT
23 A 122*	2,4,6-COLLIDINE	T	4.90E 05	7.10E 00	4.20E 03	5
23 A 083*	4-PHENYLPYRIDINE	T	4.90E 05	7.10E 00	4.20E 03	5
23 A 062*	3-ETHYLPYRIDINE	T	4.90E 05	7.10E 00	4.20E 03	5
23 A 081*	2-PHENYLPYRIDINE	T	4.90E 05	7.10E 00	4.20E 03	5
10 B 100*	MORPHOLINE	T	4.90E 05	7.00E 00	4.13E 03	5
07 A 140*	BENZALDEHYDE	T	4.10E 05	6.94E 00	4.10E 03	4
08 D 140*	AMYL ACETATES	T	3.60E 06	6.92E 00	4.10E 03	6
08 D 141*	N-AMYL ACETATE	T	3.60E 06	6.92E 00	4.10E 03	6
08 D 142*	SEC-AMYL ACETATE	T	3.60E 06	6.92E 00	4.10E 03	6
08 D 143*	ISOAMYL ACETATE	T	3.60E 06	6.92E 00	4.10E 03	6
08 D 200*	DIETHYL ADIPATE	T	4.90E 05	6.80E 00	4.01E 03	5
15 A 141*	N-BUTYL BENZENE	T	6.80E 05	6.80E 00	4.01E 03	5
15 A 140*	BUTYL BENZENES	T	6.80E 05	6.80E 00	4.01E 03	5
15 A 143*	TERT-BUTYL BENZENE	T	6.80E 05	6.80E 00	4.01E 03	5
15 A 142*	SEC-BUTYL BENZENE	T	6.80E 05	6.80E 00	4.01E 03	5
07 B 182*	DIHYDRO-(D OR L)CARVONE	T	4.90E 05	6.62E 00	3.90E 03	5
07 B 180*	CARVONES	T	4.90E 05	6.62E 00	3.90E 03	5
07 B 181*	CARVONE(D OR L)	T	4.90E 05	6.62E 00	3.90E 03	5
33 A 010	MAGNESIUM	D	3.90E 04	6.50E 00	3.83E 03	
08 D 220*	DIBUTYL ADIPATE	T	3.60E 06	6.20E 00	3.70E 03	6
12 A 100*	N-NITROSODIPENTYLAMINE	T	4.90E 05	6.20E 00	3.70E 03	5
05 A 160*	PHENETHYL ALCOHOL	T	4.90E 05	6.04E 00	3.60E 03	5
23 A 082*	3-PHENYLPYRIDINE	T	4.10E 05	5.94E 00	3.50E 03	4
23 A 061*	2-ETHYLPYRIDINE	T	4.10E 05	5.94E 00	3.50E 03	4
23 A 060*	MONOSUBSTITUTED ALKYL PYRIDINES	T	4.10E 05	5.94E 00	3.50E 03	4
23 A 121*	5-ETHYL-2-METHYLPYRIDINE	T	4.10E 05	5.94E 00	3.50E 03	4
23 A 122*	2,4,6-COLLIDINE	T	4.10E 05	5.94E 00	3.50E 03	4
23 A 063*	4-ETHYLPYRIDINE	T	4.10E 05	5.94E 00	3.50E 03	4
23 A 080*	PHENYLPYRIDINES	T	4.10E 05	5.94E 00	3.50E 03	4
23 A 120*	COLLIDINES	T	4.10E 05	5.94E 00	3.50E 03	4
23 A 081*	2-PHENYLPYRIDINE	T	4.10E 05	5.94E 00	3.50E 03	4
23 A 083*	4-PHENYLPYRIDINE	T	4.10E 05	5.94E 00	3.50E 03	4
23 A 064*	4-N-PROPYLPYRIDINE	T	4.10E 05	5.94E 00	3.50E 03	4
23 A 062*	3-ETHYLPYRIDINE	T	4.10E 05	5.94E 00	3.50E 03	4

PRODUCT GAS PARTICULATE, HEALTH IMPACT

DMEG NO.		COMPOUND NAME	TYPE	CONC E-6 G/SCM	DS	WDS G/S	LCCAT
15 B 181*		1,2,3-TRIMETHYLBENZENE	T	6.80E 05	5.70E 00	3.34E 03	3
15 B 182*		1,2,4-TRIMETHYLBENZENE	T	6.80E 05	5.70E 00	3.34E 03	3
15 B 202*		1,2,3,5-TETRAMETHYLBENZENE	T	6.80E 05	5.70E 00	3.34E 03	3
15 B 180*		TRIMETHYLBENZENES	T	6.80E 05	5.70E 00	3.34E 03	3
15 B 201*		1,2,3,4-TETRAMETHYLBENZENE	T	6.80E 05	5.70E 00	3.34E 03	3
15 B 200*		TETRAMETHYLBENZENES	T	6.80E 05	5.70E 00	3.34E 03	3
15 B 183*		1,3,5-TRIMETHYLBENZENE	T	6.80E 05	5.70E 00	3.34E 03	3
15 B 203*		1,2,4,5-TETRAMETHYLBENZENE	T	6.80E 05	5.70E 00	3.34E 03	3
21 C 040*		BENZO(G)CHRYSENE	T	8.90E 04	5.60E 00	3.30E 03	2
27 A 010		LITHIUM	S	1.20E 02	5.50E 00	3.21E 03	
23 B 160*		BENZO(H)QUINOLINE	T	4.90E 05	5.44E 00	3.21E 03	5
23 B 080*		ACRIDINE	T	4.90E 05	5.44E 00	3.21E 03	5
23 B 140*		BENZO(F)QUINOLINE	T	4.90E 05	5.44E 00	3.21E 03	5
13 B 080*		METHYL DISULFIDE	T	4.90E 05	5.44E 00	3.21E 03	5
05 B 120*		BORNEOL	T	4.90E 05	5.44E 00	3.21E 03	5
23 B 120*		PHENANTHRIDINE	T	4.90E 05	5.44E 00	3.21E 03	5
15 B 142*		1,4-DIHYDRONAPHTHALENE	T	6.80E 05	5.23E 00	3.10E 03	3
15 B 141*		1,2-DIHYDRONAPHTHALENE	T	6.80E 05	5.23E 00	3.10E 03	3
15 B 120*		TETRAHYDRONAPHTHALENE	T	6.80E 05	5.23E 00	3.10E 03	3
15 B 140*		DIHYDRONAPHTHALENES	T	6.80E 05	5.23E 00	3.10E 03	3
38 A 010		ALUMINUM	D	2.70E 04	5.20E 00	3.10E 03	
08 D 121*		N-BUTYL ACETATE	T	3.60E 06	5.14E 00	3.03E 03	6
08 D 122*		SEC-BUTYL ACETATE	T	3.60E 06	5.14E 00	3.03E 03	6
08 D 123*		ISOBUTYL ACETATE	T	3.60E 06	5.14E 00	3.03E 03	6
08 D 120*		BUTYL ACETATES	T	3.60E 06	5.14E 00	3.03E 03	6
13 B 060*		DIPHENYL SULFIDE	T	4.90E 05	5.10E 00	3.01E 03	5
18 C 040*	W	2-NAPHTHOL	T	4.90E 05	4.50E 00	2.62E 03	5
21 B 100*		BENZO(C)PHENANTHRENE & ALKYL DERIVATIVES	D	9.70E 02	4.40E 00	2.60E 03	3
08 D 101*		N-PROPYL ACETATE	T	3.60E 06	4.30E 00	2.52E 03	6
08 D 100*		PROPYL ACETATES	T	3.60E 06	4.30E 00	2.52E 03	6
20 B 040*	W	DINITRO-P-CRESOLS	D	8.40E 02	4.20E 00	2.50E 03	5
18 C 020*		1-NAPHTHOL	T	4.90E 05	4.10E 00	2.40E 03	5
06 A 040*		PROPYLENE GLYCOL	T	3.60E 06	3.80E 00	2.23E 03	6
03 B 060*		2-ETHYL-4-METHYL-1,3-DIOXOLANE	T	4.90E 05	3.80E 00	2.22E 03	5

PRODUCT GAS PARTICULATE, HEALTH IMPACT

DMEG NO.		COMPOUND NAME	TYPE	CONC E-6 G/SCM	OS	WDS G/S	LCCAT
08 A 160*		BENZOIC ACID	T	4.90E 05	3.50E 00	2.10E 03	5
08 D 320*	P	BUTYL BENZYL PHTHALATE	T	4.90E 05	3.50E 00	2.10E 03	5
06 B 020*	W	2,3-EPOXY-1-PROPANOL	T	4.90E 05	3.30E 00	1.92E 03	5
18 C 082*		4-INDANOL	T	4.90E 05	3.30E 00	1.92E 03	5
18 C 081*		1-INDANOL	T	4.90E 05	3.30E 00	1.92E 03	5
18 C 080*		INDANOLS	T	4.90E 05	3.30E 00	1.92E 03	5
05 A 100*		ISOBUTYL ALCOHOL	T	4.90E 05	3.30E 00	1.92E 03	5
05 A 080*		N-BUTANOL	T	4.90E 05	3.30E 00	1.92E 03	5
18 C 083*		5-INDANOL	T	4.90E 05	3.30E 00	1.92E 03	5
05 B 080*		2,6-DIMETHYL-4-HEPTANOL	T	4.90E 05	3.30E 00	1.92E 03	5
08 A 180*		ADIPIC ACID	T	4.90E 05	3.10E 00	1.80E 03	5
03 A 040*	W	3-METHOXYBIPHENYL	T	4.90E 05	3.10E 00	1.80E 03	5
21 A 041*		1-METHYLNAPHTHALENE	T	4.90E 05	3.10E 00	1.80E 03	5
21 B 180*	P	PYRENE	T	6.80E 05	3.00E 00	1.74E 03	3
21 A 081*		1,4-DIMETHYLNAPHTHALENE	T	6.80E 05	3.00E 00	1.74E 03	3
21 A 080*		DIMETHYLNAPHTHALENES	T	6.80E 05	3.00E 00	1.74E 03	3
15 B 020*		INDAN	T	6.80E 05	3.00E 00	1.74E 03	3
21 A 083*		2,6-DIMETHYLNAPHTHALENE	T	6.80E 05	3.00E 00	1.74E 03	3
21 A 082*		2,3-DIMETHYLNAPHTHALENE	T	6.80E 05	3.00E 00	1.74E 03	3
21 A 044*		2-ETHYLNAPHTHALENE	T	6.80E 05	3.00E 00	1.74E 03	3
21 A 043*		1-ETHYLNAPHTHALENE	T	6.80E 05	3.00E 00	1.74E 03	3
21 A 040*		MONOALKYL NAPHTHALENES	T	6.80E 05	3.00E 00	1.74E 03	3
21 A 042*		2-METHYLNAPHTHALENE	T	6.80E 05	3.00E 00	1.74E 03	3
06 B 020*	W	2,3-EPOXY-1-PROPANOL	T	6.80E 05	3.00E 00	1.74E 03	3
15 A 120*		ISOPROPYL BENZENE	T	4.10E 05	2.73E 00	1.61E 03	4
16 A 180*		2-CHLOROTOLUENE	T	6.80E 05	2.71E 00	1.60E 03	3
15 A 100*		PROPYL BENZENE	T	6.80E 05	2.71E 00	1.60E 03	3
05 C 060*		A-TERPINEOL	T	6.80E 05	2.71E 00	1.60E 03	3
08 C 040*		ACETAMIDE	T	4.90E 05	2.60E 00	1.52E 03	5
03 A 040*	W	3-METHOXYBIPHENYL	T	3.60E 06	2.60E 00	1.51E 03	6
02 A 343*		1,3-DICHLOROPROPANE	T	4.10E 05	2.60E 00	1.51E 03	4
02 A 340*	P	DICHLOROPROPANES	T	8.70E 05	2.50E 00	1.50E 03	1
01 A 201		N-OCTANE	T	8.70E 05	2.50E 00	1.50E 03	1
01 A 200	W	OCTANES	T	8.70E 05	2.50E 00	1.50E 03	1

PRODUCT GAS PARTICULATE, HEALTH IMPACT

DMEG NO.		COMPOUND NAME	TYPE	CONC E-6 G/SCM	DS	WDS G/S	LCCAT
17 B 023*		1-METHOXY-4-NITROBENZENE	T	4.90E 05	2.33E 00	1.40E 03	5
17 B 020*		METHOXYNITROBENZENES	T	4.90E 05	2.33E 00	1.40E 03	5
17 B 022*		1-METHOXY-3-NITROBENZENE	T	4.90E 05	2.33E 00	1.40E 03	5
17 B 021*		1-METHOXY-2-NITROBENZENE	T	4.90E 05	2.33E 00	1.40E 03	5
16 A 100*	P	1,2-DICHLOROBENZENE	T	6.80E 05	2.30E 00	1.33E 03	3
16 A 120*	P	1,3-DICHLOROBENZENE	T	6.80E 05	2.30E 00	1.33E 03	3
14 A 041		9,10-ANTHRAQUINONE-1,5-DISULFONIC ACID	T	3.00E 05	2.14E 00	1.30E 03	7
14 A 043		9,10-ANTHRAQUINONE-1,7-DISULFONIC ACID	T	3.00E 05	2.14E 00	1.30E 03	7
26 B 040	W	TRITOTYL PHOSPHATES	T	3.00E 05	2.14E 00	1.30E 03	7
08 A 160*		BENZOIC ACID	T	3.00E 05	2.14E 00	1.30E 03	7
14 A 044		9,10-ANTHRAQUINONE-1,8-DISULFONIC ACID	T	3.00E 05	2.14E 00	1.30E 03	7
02 A 140*	P	DIBROMOCHLOROMETHANE	T	8.90E 04	2.00E 00	1.20E 03	2
22 A 010*	W	INDENE	T	8.90E 04	2.00E 00	1.20E 03	2
08 D 240*		DI-2-ETHYLBUTYL ADIPATE	T	4.90E 05	2.00E 00	1.20E 03	5
17 B 021*		1-METHOXY-2-NITROBENZENE	T	4.10E 05	2.00E 00	1.20E 03	4
17 B 020*		METHOXYNITROBENZENES	T	4.10E 05	2.00E 00	1.20E 03	4
17 B 022*		1-METHOXY-3-NITROBENZENE	T	4.10E 05	2.00E 00	1.20E 03	4
17 B 023*		1-METHOXY-4-NITROBENZENE	T	4.10E 05	2.00E 00	1.20E 03	4
16 A 020*	P	CHLOROBENZENE	T	6.80E 05	1.94E 00	1.14E 03	3
08 A 180*		ADIPIC ACID	T	3.00E 05	1.90E 00	1.10E 03	1
15 A 040*	P	TOLUENE	T	6.80E 05	1.80E 00	1.10E 03	3
21 A 020*	P	NAPHTHALENE	T	8.90E 04	1.80E 00	1.10E 03	2
16 A 080*		BROMOCHLOROBENZENES	T	6.80E 05	1.74E 00	1.02E 03	3
16 A 083*		1-BROMO-4-CHLOROBENZENE	T	6.80E 05	1.74E 00	1.02E 03	3
16 A 081*		1-BROMO-2-CHLOROBENZENE	T	6.80E 05	1.74E 00	1.02E 03	3
16 A 082*		1-BROMO-3-CHLOROBENZENE	T	6.80E 05	1.74E 00	1.02E 03	3
15 A 080*		STYRENE	T	6.80E 05	1.61E 00	9.60E 02	3
02 A 361*		1-BROMOBUTANE	T	8.90E 04	1.60E 00	9.40E 02	2
21 A 140*	P	ANTHRACENE	T	8.90E 04	1.60E 00	9.40E 02	2
02 A 360*		BROMOBUTANES	T	8.90E 04	1.60E 00	9.40E 02	2
15 B 083*		P-XYLENE	T	6.80E 05	1.54E 00	9.11E 02	3
15 B 100*		DIALKYL BENZENES (MW:134-191)	T	6.80E 05	1.54E 00	9.11E 02	3
15 B 081*		O-XYLENE	T	6.80E 05	1.54E 00	9.11E 02	3
15 B 103*		P-DIETHYL BENZENE	T	6.80E 05	1.54E 00	9.11E 02	3

PRODUCT GAS PARTICULATE, HEALTH IMPACT

DMEG NO.		COMPOUND NAME	TYPE	CONC E-6 G/SCM	DS	WDS G/S	LCCAT
15 B 106*		1,4-DI-TERT-BUTYL BENZENE	T	6.80E 05	1.54E 00	9.11E 02	3
15 B 104*		O-DIISOPROPYL BENZENE	T	6.80E 05	1.54E 00	9.11E 02	3
15 B 082*		M-XYLENE	T	6.80E 05	1.54E 00	9.11E 02	3
15 B 105*		M-DIISOPROPYL BENZENE	T	6.80E 05	1.54E 00	9.11E 02	3
15 B 102*		M-DIETHYL BENZENE	T	6.80E 05	1.54E 00	9.11E 02	3
15 A 060*	P	ETHYL BENZENE	T	6.80E 05	1.54E 00	9.11E 02	3
15 B 080*		XYLENES	T	6.80E 05	1.54E 00	9.11E 02	3
15 B 101*		O-DIETHYL BENZENE	T	6.80E 05	1.54E 00	9.11E 02	3
16 A 140*	P	1,4-DICHLOROBENZENE	T	6.80E 05	1.54E 00	9.11E 02	3
17 A 080*		DINITROTOLUENES	T	6.80E 05	1.51E 00	8.91E 02	3
16 A 063*		1,4-DIBROMOBENZENE	D	2.20E 03	1.50E 00	8.70E 02	4
16 A 061*		1,2-DIBROMOBENZENE	T	6.80E 05	1.41E 00	8.40E 02	3
16 A 062*		1,3-DIBROMOBENZENE	T	6.80E 05	1.41E 00	8.40E 02	3
16 A 060*		DIBROMOBENZENES	T	6.80E 05	1.41E 00	8.40E 02	3
16 A 040*		BROMOBENZENE	T	6.80E 05	1.41E 00	8.40E 02	3
05 B 062*		3-PENTANOL	T	6.80E 05	1.40E 00	8.20E 02	3
05 A 122*		2-METHYL-1-BUTANOL	T	4.90E 05	1.40E 00	8.03E 02	5
05 A 124*		3-METHYL-1-BUTANOL	T	4.90E 05	1.40E 00	8.03E 02	5
05 A 123*		2,2-DIMETHYL-1-PROPANOL	T	4.90E 05	1.40E 00	8.03E 02	5
23 A 041*		2-METHYLPYRIDINE	T	4.90E 05	1.40E 00	8.03E 02	5
05 B 060*		PENTANOLS (SECONDARY)	T	4.90E 05	1.40E 00	8.03E 02	5
23 A 042*		3-METHYLPYRIDINE	T	4.90E 05	1.40E 00	8.03E 02	5
05 B 061*		2-PENTANOL	T	4.90E 05	1.40E 00	8.03E 02	5
23 A 043*		4-METHYLPYRIDINE	T	4.90E 05	1.40E 00	8.03E 02	5
05 B 063*		3-METHYL-2-BUTANOL	T	4.90E 05	1.40E 00	8.03E 02	5
05 A 120*		PENTANOLS (PRIMARY)	T	4.90E 05	1.40E 00	8.03E 02	5
05 A 121*		N-PENTANOL	T	4.90E 05	1.40E 00	8.03E 02	5
78 A 010	P	COPPER	T	4.90E 05	1.40E 00	8.03E 02	5
32 A 010	P	BERYLLIUM	D	2.70E 02	1.34E 00	8.00E 02	
02 B 080*	P	TETRACHLOROETHENE	S	2.60E 00	1.30E 00	7.70E 02	
16 A 200*	P	CHLORONAPHTHALENES	T	8.70E 05	1.30E 00	7.70E 02	1
16 A 202*		2-CHLORONAPHTHALENE	T	8.90E 04	1.30E 00	7.61E 02	2
16 A 201*		1-CHLORONAPHTHALENE	T	8.90E 04	1.30E 00	7.61E 02	2
35 A 010		STRONTIUM	T	8.90E 04	1.30E 00	7.61E 02	2
			D	3.90E 03	1.30E 00	7.42E 02	

PRODUCT GAS PARTICULATE, HEALTH IMPACT

DMEG NO.		COMPOUND NAME	TYPE	CONC E-6 G/SCM	DS	WDS G/S	LCCAT
21 B 080*		3-METHYLCHOLANTHRENE	D	4.70E 00	1.23E 00	7.30E 02	3
08 D 260*		DI-2-ETHYLHEXYL ADIPATE	T	4.90E 05	1.20E 00	7.10E 02	5
23 A 042*		3-METHYLPYRIDINE	T	4.10E 05	1.13E 00	6.71E 02	4
23 A 043*		4-METHYLPYRIDINE	T	4.10E 05	1.13E 00	6.71E 02	4
23 A 041*		2-METHYLPYRIDINE	T	4.10E 05	1.13E 00	6.71E 02	4
23 C 062*		3-METHYLINDOLE	T	4.90E 05	1.10E 00	6.42E 02	5
26 B 020		TRIPHENYL PHOSPHATE	T	3.00E 05	1.03E 00	6.10E 02	7
22 B 040*	P W	FLUORANTHENE	T	8.90E 04	9.90E-01	5.83E 02	2
08 D 140*		AMYL ACETATES	T	4.90E 05	9.42E-01	5.60E 02	5
08 D 141*		N-AMYL ACETATE	T	4.90E 05	9.42E-01	5.60E 02	5
08 D 142*		SEC-AMYL ACETATE	T	4.90E 05	9.42E-01	5.60E 02	5
08 D 143*		ISOAMYL ACETATE	T	4.90E 05	9.42E-01	5.60E 02	5
23 C 062*		3-METHYLINDULE	T	4.10E 05	9.11E-01	5.40E 02	4
15 A 142*		SEC-BUTYL BENZENE	T	8.90E 04	8.90E-01	5.30E 02	2
15 A 143*		TERT-BUTYL BENZENE	T	8.90E 04	8.90E-01	5.30E 02	2
15 A 141*		N-BUTYL BENZENE	T	8.90E 04	8.90E-01	5.30E 02	2
15 A 140*		BUTYL BENZENES	T	8.90E 04	8.90E-01	5.30E 02	2
01 A 242		N-UNDECANE	T	8.70E 05	8.70E-01	5.13E 02	1
01 A 240		ALKANES(C=10,11)	T	8.70E 05	8.70E-01	5.13E 02	1
01 A 241		N-DECANE	T	8.70E 05	8.70E-01	5.13E 02	1
01 A 220		NONANES	T	8.70E 05	8.70E-01	5.13E 02	1
01 A 260		N-DODECANE	T	8.70E 05	8.70E-01	5.13E 02	1
01 A 222		ISONONANE	T	8.70E 05	8.70E-01	5.13E 02	1
01 A 221		N-NONANE	T	8.70E 05	8.70E-01	5.13E 02	1
46 A 010	P	LEAD	S	1.30E 02	8.70E-01	5.11E 02	
08 D 220*		DIBUTYL ADIPATE	T	4.90E 05	8.44E-01	5.00E 02	5
50 A 010	P	ANTIMONY	D	< 3.80E 02<	7.60E-01<	4.50E 02	
15 B 203*		1,2,4,5-TETRAMETHYLBENZENE	T	8.90E 04	7.41E-01	4.40E 02	2
15 B 181*		1,2,3-TRIMETHYLBENZENE	T	8.90E 04	7.41E-01	4.40E 02	2
15 B 182*		1,2,4-TRIMETHYLBENZENE	T	8.90E 04	7.41E-01	4.40E 02	2
15 B 180*		TRIMETHYLBENZENES	T	8.90E 04	7.41E-01	4.40E 02	2
15 B 201*		1,2,3,4-TETRAMETHYLBENZENE	T	8.90E 04	7.41E-01	4.40E 02	2
15 B 183*		1,3,5-TRIMETHYLBENZENE	T	8.90E 04	7.41E-01	4.40E 02	2
15 B 200*		TETRAMETHYLBENZENES	T	8.90E 04	7.41E-01	4.40E 02	2

PRODUCT GAS PARTICULATE, HEALTH IMPACT

DMEG NO.			COMPOUND NAME	TYPE	CONC E-6 G/SCM	DS	WDS G/S	LCCAT
15 B 202*			1,2,3,5-TETRAMETHYLBENZENE	T	8.90E 04	7.41E-01	4.40E 02	2
08 D 122*			SEC-BUTYL ACETATE	T	4.90E 05	7.00E-01	4.12E 02	5
08 D 123*			ISOBUTYL ACETATE	T	4.90E 05	7.00E-01	4.12E 02	5
08 D 121*			N-BUTYL ACETATE	T	4.90E 05	7.00E-01	4.12E 02	5
08 D 120*			BUTYL ACETATES	T	4.90E 05	7.00E-01	4.12E 02	5
15 B 120*			TETRAHYDRONAPHTHALENE	T	8.90E 04	6.84E-01	4.03E 02	2
15 B 141*			1,2-DIHYDRONAPHTHALENE	T	8.90E 04	6.84E-01	4.03E 02	2
15 B 140*			DIHYDRONAPHTHALENES	T	8.90E 04	6.84E-01	4.03E 02	2
15 B 142*			1,4-DIHYDRONAPHTHALENE	T	8.90E 04	6.84E-01	4.03E 02	2
43 A 010			SILICON	S	> 6.70E 03>	6.70E-01>	4.00E 02	
21 B 040*	P		BENZ(A)ANTHRACENE	D	2.80E 01	6.22E-01	3.70E 02	2
08 D 101*			N-PROPYL ACETATE	T	4.90E 05	5.83E-01	3.44E 02	5
08 D 100*			PROPYL ACETATES	T	4.90E 05	5.83E-01	3.44E 02	5
23 B 100*		W	DIHYDROACRIDINE	D	9.10E 01	5.70E-01	3.40E 02	6
56 A 010			FLUORINE (AS F-)	S	1.30E 03	5.20E-01	3.10E 02	
06 A 040*			PROPYLENE GLYCOL	T	4.90E 05	5.20E-01	3.04E 02	5
22 C 080*	P	W	BENZO(B)FLUORANTHENE	D	3.70E 02	4.11E-01	2.42E 02	3
28 A 010			SODIUM	D	2.10E 04	4.00E-01	2.33E 02	
01 B 080			BUTADIENES	T	8.70E 05	4.00E-01	2.33E 02	1
21 A 040*			MONOALKYL NAPHTHALENES	T	8.90E 04	3.90E-01	2.30E 02	2
21 B 180*	P		PYRENE	T	8.90E 04	3.90E-01	2.30E 02	2
21 A 042*			2-METHYLNAPHTHALENE	T	8.90E 04	3.90E-01	2.30E 02	2
21 A 081*			1,4-DIMETHYLNAPHTHALENE	T	8.90E 04	3.90E-01	2.30E 02	2
21 A 043*			1-ETHYLNAPHTHALENE	T	8.90E 04	3.90E-01	2.30E 02	2
21 A 082*			2,3-DIMETHYLNAPHTHALENE	T	8.90E 04	3.90E-01	2.30E 02	2
21 A 083*			2,6-DIMETHYLNAPHTHALENE	T	8.90E 04	3.90E-01	2.30E 02	2
21 A 044*			2-ETHYLNAPHTHALENE	T	8.90E 04	3.90E-01	2.30E 02	2
21 A 041*			1-METHYLNAPHTHALENE	T	8.90E 04	3.90E-01	2.30E 02	2
15 B 020*			INDAN	T	8.90E 04	3.90E-01	2.30E 02	2
21 A 080*			DIMETHYLNAPHTHALENES	T	8.90E 04	3.60E-01	2.10E 02	2
15 A 100*			PROPYL BENZENE	T	8.90E 04	3.60E-01	2.10E 02	2
16 A 180*			2-CHLOROTOLUENE	T	8.90E 04	3.60E-01	2.10E 02	2
15 A 120*			ISOPROPYL BENZENE	S	3.20E 00	3.60E-01	2.10E 02	
85 A 010			URANIUM					

PRODUCT GAS PARTICULATE, HEALTH IMPACT

DMEG NO.		COMPOUND NAME	TYPE	CONC E-6 G/SCM	DS	WDS G/S	LCCAT
08 C 040*		ACETAMIDE	T	4.90E 05	3.50E-01	2.10E 02	5
16 A 100*	P	1,2-DICHLOROBENZENE	T	8.90E 04	3.00E-01	1.80E 02	2
16 A 120*	P	1,3-DICHLOROBENZENE	T	8.90E 04	3.00E-01	1.80E 02	2
74 A 010		COBALT	S	1.40E 01	2.80E-01	1.70E 02	
02 A 340*	P	DICHLOROPROPANES	T	8.90E 04	2.54E-01	1.50E 02	2
16 A 020*	P	CHLOROBENZENE	T	8.90E 04	2.54E-01	1.50E 02	2
02 A 343*		1,3-DICHLOROPROPANE	T	8.90E 04	2.54E-01	1.50E 02	2
15 A 040*	P	TOLUENE	T	8.90E 04	2.34E-01	1.40E 02	2
16 A 082*		1-BROMO-3-CHLOROBENZENE	T	8.90E 04	2.30E-01	1.34E 02	2
16 A 083*		1-BROMO-4-CHLOROBENZENE	T	8.90E 04	2.30E-01	1.34E 02	2
16 A 081*		1-BROMO-2-CHLOROBENZENE	T	8.90E 04	2.30E-01	1.34E 02	2
16 A 080*		BROMOCHLOROBENZENES	T	8.90E 04	2.30E-01	1.34E 02	2
15 A 080*		STYRENE	T	8.90E 04	2.11E-01	1.30E 02	2
15 B 101*		O-DIETHYL BENZENE	T	8.90E 04	2.02E-01	1.20E 02	2
15 B 083*		P-XYLENE	T	8.90E 04	2.02E-01	1.20E 02	2
15 B 104*		O-DIISOPROPYL BENZENE	T	8.90E 04	2.02E-01	1.20E 02	2
15 B 100*		DIALKYL BENZENES (MW:134-191)	T	8.90E 04	2.02E-01	1.20E 02	2
15 B 082*		M-XYLENE	T	8.90E 04	2.02E-01	1.20E 02	2
15 A 060*	P	ETHYL BENZENE	T	8.90E 04	2.02E-01	1.20E 02	2
15 B 105*		M-DIISOPROPYL BENZENE	T	8.90E 04	2.02E-01	1.20E 02	2
15 B 106*		1,4-DI-TERT-BUTYL BENZENE	T	8.90E 04	2.02E-01	1.20E 02	2
15 B 081*		O-XYLENE	T	8.90E 04	2.02E-01	1.20E 02	2
15 B 103*		P-DIETHYL BENZENE	T	8.90E 04	2.02E-01	1.20E 02	2
15 B 080*		XYLENES	T	8.90E 04	2.02E-01	1.20E 02	2
15 B 102*		M-DIETHYL BENZENE	T	8.90E 04	2.02E-01	1.20E 02	2
16 A 140*	P	1,4-DICHLOROBENZENE	T	8.90E 04	2.02E-01	1.20E 02	2
16 A 063*		1,4-DIBROMOBENZENE	T	8.90E 04	2.00E-01	1.20E 02	2
16 A 060*		DIBROMOBENZENES	T	8.90E 04	1.90E-01	1.10E 02	2
16 A 062*		1,3-DIBROMOBENZENE	T	8.90E 04	1.90E-01	1.10E 02	2
16 A 061*		1,2-DIBROMOBENZENE	T	8.90E 04	1.90E-01	1.10E 02	2
16 A 040*		BROMOBENZENE	T	8.90E 04	1.90E-01	1.10E 02	2
37 A 010		BORON	T	8.90E 04	1.81E-01	1.10E 02	2
62 A 010		TITANIUM	D	5.50E 02	1.80E-01	1.04E 02	
23 B 100*	W	DIHYDROACRIDINE	D	9.40E 02	1.60E-01	9.24E 01	
			D	2.30E 01	1.43E-01	8.50E 01	5

PRODUCT GAS PARTICULATE, HEALTH IMPACT

DMEG NO.	COMPOUND NAME	TYPE	CONC E-6 G/SCM	DS	WDS G/S	LCCAT
02 B 080* P	TETRACHLOROETHENE	T	8.90E 04	1.32E-01	7.83E 01	2
15 A 160* W	BIPHENYL	D	1.20E 02	1.20E-01	7.10E 01	3
81 A 010 P	ZINC	D	4.80E 02	1.20E-01	7.10E 01	
01 B 060	BUTYLENES	T	8.70E 05	9.60E-02	5.64E 01	1
65 A 010	VANADIUM	S	3.60E 01	7.20E-02	4.24E 01	
41 A 010 P	THALLIUM	S	3.20E 00	3.20E-02	1.90E 01	
61 A 010	YTTRIUM (AS Y+3)	S	3.00E 01	3.00E-02	1.80E 01	
71 A 010 P	MANGANESE	D	1.20E 02	2.40E-02	1.41E 01	
63 A 010	ZIRCONIUM (AS ZR+4)	S	8.70E 01	1.74E-02	1.02E 01	
85 B 010	THORIUM	S	6.40E 00	1.52E-02	9.00E 00	
44 A 010	GERMANIUM	S	7.20E 00	1.30E-02	7.60E 00	
22 C 080* P W	BENZO(B)FLUORANTHENE	D	1.00E 01	1.11E-02	6.60E 00	2
55 A 010	TELLURIUM	S	9.70E-01	9.70E-03	5.72E 00	
51 A 010	BISMUTH	S	2.60E 00	6.34E-03	3.74E 00	
64 A 010	HAFNIUM, (AS HF+4)	S	2.90E 00	5.80E-03	3.42E 00	
39 A 010	GALLIUM	S	2.30E 01	4.60E-03	2.71E 00	
70 A 010	TUNGSTEN	S	3.20E 00	3.20E-03	1.90E 00	
69 A 010	MOLYBDENUM	S	9.70E 00	1.94E-03	1.14E 00	
84 B 010	CERIUM	S	5.10E 01	1.40E-03	8.13E-01	
66 A 010	NIOBIUM (AS NB+3)	S	1.30E 01	5.90E-04	3.50E-01	
60 A 010	SCANDIUM	S	1.90E 01	3.60E-04	2.11E-01	
84 A 010	LANTHANUM	S	3.60E 01	3.30E-04	1.93E-01	
84 F 010	DYSPROSIUM	S	1.70E 00	1.82E-04	1.10E-01	
84 C 010	PRASEODYMIUM	S	6.40E 00	1.30E-04	7.40E-02	
84 E 010	SAMARIUM	S	6.40E 00	1.20E-04	7.12E-02	
30 A 010	RUBIDIUM (AS RB+)	S <	7.00E 00<	5.83E-05<	3.44E-02	
31 A 010	CESIUM	S	2.30E 00	2.80E-05	1.70E-02	
21 C 100* P W	BENZO(A)PYRENE	D	0.00E-01	0.00E-01	0.00E-01	2
20 A 120* W	2,4,6-TRINITROPHENOL	D	0.00E-01	0.00E-01	0.00E-01	6
21 A 120* PH	ACENAPHTHYLENE	T	6.80E 05	0.00E-01	0.00E-01	5
21 B 080*	3-METHYLCHOLANTHRENE	D	0.00E-01	0.00E-01	0.00E-01	2
57 A 010	CHLORINE (AS CL-)	S >	3.20E 03>	0.00E-01>	0.00E-01	
16 A 220* W	POLYCHLORINATED BIPHENYLS	D	0.00E-01	0.00E-01	0.00E-01	3
21 A 120* PH	ACENAPHTHYLENE	T	8.90E 04	0.00E-01	0.00E-01	2

PRODUCT GAS PARTICULATE, HEALTH IMPACT

DMEG NO.			COMPOUND NAME	TYPE	CONC E-6 G/SCM	DS	WDS G/S	LCCAT
21	C 080*	P	DIBENZ(A,H)ANTHRACENE	D	0.00E-01	0.00E-01	0.00E-01	2
12	A 020*	P W	N-NITROSODIMETHYLAMINE	D	0.00E-01	0.00E-01	0.00E-01	5
10	C 040*		AMINOTOLUENES	D	0.00E-01	0.00E-01	0.00E-01	5
20	A 120*	W	2,4,6-TRINITROPHENOL	D	0.00E-01	0.00E-01	0.00E-01	5
21	B 100*		BENZO(C)PHENANTHRENE & ALKYL DERIVATIVES	D	0.00E-01	0.00E-01	0.00E-01	2
23	B 240*		DIBENZ(A,H)ACRIDINE	D	0.00E-01	0.00E-01	0.00E-01	5
21	A 100*	PH	ACENAPHTHENE	T	8.90E 04	0.00E-01	0.00E-01	2
08	B 060*	W	B-PROPIOLACTONE	D	0.00E-01	0.00E-01	0.00E-01	6
45	A 010		TIN	S	1.30E 01	0.00E-01	0.00E-01	
12	A 020*	P W	N-NITROSODIMETHYLAMINE	D	0.00E-01	0.00E-01	0.00E-01	6
10	C 040*		AMINOTOLUENES	D	0.00E-01	0.00E-01	0.00E-01	6
04	A 160*	P	A-CHLOROBUTYL ETHYL ETHER	T	4.10E 05	0.00E-01	0.00E-01	4
04	A 160*	P	A-CHLOROBUTYL ETHYL ETHER	T	4.90E 05	0.00E-01	0.00E-01	5
20	B 040*	W	DINITRO-P-CRESOLS	D	0.00E-01	0.00E-01	0.00E-01	6
21	A 100*	PH	ACENAPHTHENE	T	6.80E 05	0.00E-01	0.00E-01	5
23	B 220*		DIBENZ(A,J)ACRIDINE	D	0.00E-01	0.00E-01	0.00E-01	6
23	B 240*		DIBENZ(A,H)ACRIDINE	D	0.00E-01	0.00E-01	0.00E-01	6
59	A 010		IODINE (AS I-)	S	< 4.00E 00<	0.00E-01<	0.00E-01	
21	D 040*	W	DIBENZO(A,I)PYRENE	D	0.00E-01	0.00E-01	0.00E-01	3
21	D 040*	W	DIBENZO(A,I)PYRENE	D	0.00E-01	0.00E-01	0.00E-01	2
21	B 060*	W	7,12-DIMETHYLBENZ(A)ANTHRACENE	D	0.00E-01	0.00E-01	0.00E-01	2
23	B 220*		DIBENZ(A,J)ACRIDINE	D	0.00E-01	0.00E-01	0.00E-01	5
84	D 010		NEODYMIUM	S	9.70E 00	0.00E-01	0.00E-01	
17	B 040*	W	1-CHLORO-2-NITROBENZENE	D	0.00E-01	0.00E-01	0.00E-01	4
17	B 060*	W	1-CHLORO-4-NITROBENZENE	D	0.00E-01	0.00E-01	0.00E-01	4
03	B 060*		2-ETHYL-4-METHYL-1,3-DIOXOLANE	D	0.00E-01	0.00E-01	0.00E-01	4
29	A 010		POTASSIUM	S	> 3.20E 03>	0.00E-01>	0.00E-01	
09	A 120*	W	TETRAMETHYLSUCCINONITRILE	D	0.00E-01	0.00E-01	0.00E-01	4
25	B 040*	W	BENZO(B)THIOPHENE	D	0.00E-01	0.00E-01	0.00E-01	4
09	B 020*	W	BENZONITRILE	D	0.00E-01	0.00E-01	0.00E-01	4
21	D 080*	PH	BENZO(GHI)PERYLENE	T	8.90E 04	0.00E-01	0.00E-01	2
21	D 080*	PH	BENZO(GHI)PERYLENE	T	6.80E 05	0.00E-01	0.00E-01	3
08	B 060*	W	B-PROPIOLACTONE	D	0.00E-01	0.00E-01	0.00E-01	5
53	A 010		SULFUR	S	> 3.50E 03>	0.00E-01>	0.00E-01	

PRODUCT GAS PARTICULATE, HEALTH IMPACT

DMEG NO.		COMPOUND NAME	TYPE	CONC E-6 G/SCM	DS	WDS G/S	LCCAT
22 A 020*	PH	FLUORENE	T	8.90E 04	0.00E-01	0.00E-01	2
22 A 020*	PH	FLUORENE	T	6.80E 05	0.00E-01	0.00E-01	3
58 A 010		BROMINE	S	1.30E 02	0.00E-01	0.00E-01	

PRODUCT GAS PARTICULATE

FLOW RATE = 590 G/S (0.57 SCM/S, DRY BASIS)

8.523 SCM AT 25C AND 760 MM HG SAMPLED

TOTAL ORGANIC LOADING = 7.3 G/SCM

TOTAL TCO = 380 MG/SCM TOTAL GRAV = 6900 MG/SCM

0.17% ORIGINAL SAMPLE TO LC

LC TCO = 5.3 MG LC GRAV = 97.6 MG LC TOTAL = 102.9 MG

LCCAT	ORGANIC LOADING
1	870000.0
2	89000.0
3	680000.0
4	410000.0
5	490000.0
6	3600000.0
7	300000.0

FLOW RATE = 590.00

STATE: GAS, UNITS IN MICROGRAMS/SCM

IMPACT: ECOLOGY

EXPERIMENTALY DETERMINED DATA

SPARK SOURCE DATA

PRODUCT GAS PARTICULATE, ECOLOGY IMPACT

OMEG NO.		COMPOUND NAME	TYPE	CONC E-6 G/SCM	DS	WDS G/S	LOCAT
83 A 010	P	MERCURY	D	6.50E 03	6.50E 02	3.83E 05	
15 A 120*		ISOPROPYL BENZENE	T	6.80E 05	5.70E 02	3.34E 05	3
15 A 040*	P	TOLUENE	T	6.80E 05	1.50E 02	8.72E 04	3
15 A 120*		ISOPROPYL BENZENE	T	8.90E 04	7.41E 01	4.40E 04	2
65 A 010		VANADIUM	S	3.60E 01	3.60E 01	2.12E 04	
15 A 040*	P	TOLUENE	T	8.90E 04	1.95E 01	1.14E 04	2
01 B 080		BUTADIENES	T	8.70E 05	4.00E-01	2.35E 02	1
01 B 060		BUTYLENES	T	8.70E 05	3.80E-02	2.23E 01	1
16 A 220*		POLYCHLORINATED BIPHENYLS	D	< 7.60E 00<	0.00E-01<	0.00E-01	2
22 C 080*	P	BENZO(B)FLUORANTHENE	D	1.00E 01	0.00E-01	0.00E-01	2
21 C 100*	P	BENZO(A)PYRENE	D	0.00E-01	0.00E-01	0.00E-01	2
16 A 220*		POLYCHLORINATED BIPHENYLS	D	0.00E-01	0.00E-01	0.00E-01	3
21 B 060*		7,12-DIMETHYLBENZ(A)ANTHRACENE	D	1.60E 02	0.00E-01	0.00E-01	3
22 C 080*	P	BENZO(B)FLUORANTHENE	D	3.70E 02	0.00E-01	0.00E-01	3
21 B 100*		BENZO(C)PHENANTHRENE & ALKYL DERIVATIVES	D	0.00E-01	0.00E-01	0.00E-01	2
21 B 060*		7,12-DIMETHYLBENZ(A)ANTHRACENE	D	0.00E-01	0.00E-01	0.00E-01	2
21 C 100*	P	BENZO(A)PYRENE	D	1.90E 02	0.00E-01	0.00E-01	3
21 D 040*		DIBENZO(A,I)PYRENE	D	0.00E-01	0.00E-01	0.00E-01	2
21 C 060*	P	DIBENZ(A,H)ANTHRACENE	D	6.10E 00	0.00E-01	0.00E-01	3
17 B 040		1-CHLORO-2-NITROBENZENE	D	0.00E-01	0.00E-01	0.00E-01	4
21 B 080*		3-METHYLCHOLANTHRENE	D	0.00E-01	0.00E-01	0.00E-01	2
21 C 080*	P	DIBENZ(A,H)ANTHRACENE	D	0.00E-01	0.00E-01	0.00E-01	2
03 B 060		2-ETHYL-4-METHYL-1,3-DIOXOLANE	D	0.00E-01	0.00E-01	0.00E-01	4
09 A 120		TETRAMETHYLSUCCINONITRILE	D	0.00E-01	0.00E-01	0.00E-01	4
25 B 040		BENZO(B)THIOPHENE	D	0.00E-01	0.00E-01	0.00E-01	4
09 B 020		BENZONITRILE	D	0.00E-01	0.00E-01	0.00E-01	4
12 A 020*	P	N-NITROSODIMETHYLAMINE	D	0.00E-01	0.00E-01	0.00E-01	5
10 C 040*		AMINOTOLUENES	D	0.00E-01	0.00E-01	0.00E-01	5
08 B 060*		B-PROPIOLACTONE	D	0.00E-01	0.00E-01	0.00E-01	5
20 A 120*		2,4,6-TRINITROPHENOL	D	0.00E-01	0.00E-01	0.00E-01	5
20 B 040*		DINITRO-P-CRESOLS	D	8.40E 02	0.00E-01	0.00E-01	5
23 B 100*		DIHYDROACRIDINE	D	2.30E 01	0.00E-01	0.00E-01	5
23 B 220*		DIBENZ(A,J)ACRIDINE	D	0.00E-01	0.00E-01	0.00E-01	5
23 B 240*		DIBENZ(A,H)ACRIDINE	D	0.00E-01	0.00E-01	0.00E-01	5

PRODUCT GAS PARTICULATE, ECOLOGY IMPACT

DMEG NO.		COMPOUND NAME	TYPE	CONC E-6 G/SCM	DS	MDS G/S	LOCAT
12 A 020*	P	N-NITROSODIMETHYLAMINE	D	0.00E-01	0.00E-01	0.00E-01	6
10 C 040*		AMINOTOLUENES	D	0.00E-01	0.00E-01	0.00E-01	6
15 A 100		BIPHENYL	D	1.20E 02	0.00E-01	0.00E-01	3
21 B 040*	P	BENZ(A)ANTHRACENE	D	1.70E 03	0.00E-01	0.00E-01	3
20 B 040*		DINITRO-P-CRESOLS	D	0.00E-01	0.00E-01	0.00E-01	6
23 B 100*		DIHYDROACRIDINE	D	9.10E 01	0.00E-01	0.00E-01	6
21 D 040*		DIBENZO(A,I)PYRENE	D	0.00E-01	0.00E-01	0.00E-01	3
21 B 100*		BENZO(C)PHENANTHRENE & ALKYL DERIVATIVES	D	9.70E 02	0.00E-01	0.00E-01	3
38 A 010		ALUMINUM	D	2.70E 04	0.00E-01	0.00E-01	
21 B 080*		3-METHYLCHOLANTHRENE	D	4.70E 00	0.00E-01	0.00E-01	3
49 A 010	P	ARSENIC	D	3.70E 02	0.00E-01	0.00E-01	
36 A 010		BARIUM	D	7.60E 03	0.00E-01	0.00E-01	
17 B 060		1-CHLORO-4-NITROBENZENE	D	0.00E-01	0.00E-01	0.00E-01	4
17 A 080		DINITROTOLUENES	D	2.20E 03	0.00E-01	0.00E-01	4
34 A 010		CALCIUM (AS CA+2)	D	1.50E 05	0.00E-01	0.00E-01	
78 A 010	P	COPPER	D	2.70E 02	0.00E-01	0.00E-01	
72 A 010		IRON (AS FE+2)	D	< 3.30E 04<	0.00E-01<	0.00E-01	
33 A 010		MAGNESIUM	D	3.90E 04	0.00E-01	0.00E-01	
71 A 010	P	MANGANESE	D	1.20E 02	0.00E-01	0.00E-01	
21 B 040*	P	BENZ(A)ANTHRACENE	D	2.80E 01	0.00E-01	0.00E-01	2
54 A 010	P	SELENIUM	D	1.50E 04	0.00E-01	0.00E-01	
28 A 010		SODIUM	D	2.10E 04	0.00E-01	0.00E-01	
35 A 010		STRONTIUM	D	3.90E 03	0.00E-01	0.00E-01	
62 A 010		TITANIUM	D	9.40E 02	0.00E-01	0.00E-01	
81 A 010	P	ZINC	D	4.80E 02	0.00E-01	0.00E-01	
32 A 010	P	BERYLLIUM	S	2.60E 00	0.00E-01	0.00E-01	
51 A 010		BISMUTH	S	2.60E 00	0.00E-01	0.00E-01	
58 A 010		BROMINE	S	1.30E 02	0.00E-01	0.00E-01	
84 B 010		CERIUM	S	5.10E 01	0.00E-01	0.00E-01	
31 A 010		CESIUM	S	2.30E 00	0.00E-01	0.00E-01	
57 A 010		CHLORINE (AS CL-)	S	> 5.20E 03>	0.00E-01>	0.00E-01	
66 A 010	P	CHROMIUM	S	8.80E 01	0.00E-01	0.00E-01	
74 A 010		COBALT	S	1.40E 01	0.00E-01	0.00E-01	
84 F 010		DYSPROSIUM	S	1.70E 00	0.00E-01	0.00E-01	

PRODUCT GAS PARTICULATE, ECOLOGY IMPACT

OMEG NO.			COMPOUND NAME	TYPE	CONC E-6 G/SCM	OS	WDS G/S	LCLAT
56	A 010		FLUORINE (AS F-)	S	1.30E 03	0.00E-01	0.00E-01	
39	A 010		GALLIUM	S	2.30E 01	0.00E-01	0.00E-01	
44	A 010		GERMANIUM	S	7.20E 00	0.00E-01	0.00E-01	
64	A 010		HAFNIUM, (AS HF+4)	S	2.90E 00	0.00E-01	0.00E-01	
59	A 010		IODINE (AS I-)	S	< 4.00E 00<	0.00E-01<	0.00E-01	
84	A 010		LANTHANUM	S	3.60E 01	0.00E-01	0.00E-01	
46	A 010	P	LEAD	S	1.30E 02	0.00E-01	0.00E-01	
27	A 010		LITHIUM	S	1.20E 02	0.00E-01	0.00E-01	
69	A 010		MOLYBDENUM	S	9.70E 00	0.00E-01	0.00E-01	
84	D 010		NEODYMIUM	S	9.70E 00	0.00E-01	0.00E-01	
76	A 010	P	NICKEL	S	1.10E 02	0.00E-01	0.00E-01	
66	A 010		NIOBIUM (AS NB+3)	S	1.30E 01	0.00E-01	0.00E-01	
48	A 010		PHOSPHORUS	S	> 3.20E 03>	0.00E-01>	0.00E-01	
29	A 010		POTASSIUM	S	> 3.20E 03>	0.00E-01>	0.00E-01	
84	C 010		PRASEODYMIUM	S	6.40E 00	0.00E-01	0.00E-01	
30	A 010		RUBIDIUM (AS RB+)	S	< 7.00E 00<	0.00E-01<	0.00E-01	
84	E 010		SAMARIUM	S	6.40E 00	0.00E-01	0.00E-01	
60	A 010		SCANDIUM	S	1.90E 01	0.00E-01	0.00E-01	
43	A 010		SILICON	S	> 6.70E 03>	0.00E-01>	0.00E-01	
79	A 010	P	SILVER	S	1.10E 02	0.00E-01	0.00E-01	
53	A 010		SULFUR	S	> 3.50E 03>	0.00E-01>	0.00E-01	
55	A 010		TELLURIUM	S	9.70E-01	0.00E-01	0.00E-01	
41	A 010	P	THALLIUM	S	3.20E 00	0.00E-01	0.00E-01	
85	B 010		THORIUM	S	6.40E 00	0.00E-01	0.00E-01	
45	A 010		TIN	S	1.30E 01	0.00E-01	0.00E-01	
70	A 010		TUNGSTEN	S	3.20E 00	0.00E-01	0.00E-01	
85	A 010		URANIUM	S	3.20E 00	0.00E-01	0.00E-01	
50	A 010	P	ANTIMONY	D	< 3.80E 02<	0.00E-01<	0.00E-01	
61	A 010		YTTRIUM (AS Y+3)	S	3.00E 01	0.00E-01	0.00E-01	
63	A 010		ZIRCONIUM (AS ZR+4)	S	8.70E 01	0.00E-01	0.00E-01	
37	A 010		BORON	D	5.50E 02	0.00E-01	0.00E-01	
82	A 010	P	CADMIUM	D	2.70E 02	0.00E-01	0.00E-01	
02	A 140*	P	DIBROMOCHLOROMETHANE	T	8.70E 05	0.00E-01	0.00E-01	1
02	A 140*	P	DIBROMOCHLOROMETHANE	T	8.90E 04	0.00E-01	0.00E-01	2

PRODUCT GAS PARTICULATE, ECOLOGY IMPACT

DMEG NO.			COMPOUND NAME	TYPE	CONC E-6 G/SCM	DS	MDS G/S	ECCAT
02	A	100*	P	BROMOFORM	I	8.70E 05	0.00E-01	0.00E-01	1
02	A	100*	F	BROMOFORM	I	8.90E 04	0.00E-01	0.00E-01	2
02	A	320*	P	HEXACHLOROETHANE	I	8.70E 05	0.00E-01	0.00E-01	1
02	A	320*	P	HEXACHLOROETHANE	I	8.90E 04	0.00E-01	0.00E-01	2
02	A	340*	P	DICHLOROPROPANES	I	8.70E 05	0.00E-01	0.00E-01	1
02	A	340*	P	DICHLOROPROPANES	I	8.90E 04	0.00E-01	0.00E-01	2
02	B	080*	P	TETRACHLOROETHENE	I	8.70E 05	0.00E-01	0.00E-01	1
02	B	080*	P	TETRACHLOROETHENE	I	8.90E 04	0.00E-01	0.00E-01	2
02	B	100*	P	DICHLOROPROPENES	I	8.70E 05	0.00E-01	0.00E-01	1
02	B	100*	P	DICHLOROPROPENES	I	8.90E 04	0.00E-01	0.00E-01	2
02	B	120*	P	HEXACHLOROBUTADIENE	I	8.70E 05	0.00E-01	0.00E-01	1
02	B	120*	P	HEXACHLOROBUTADIENE	I	8.90E 04	0.00E-01	0.00E-01	2
02	B	140*	P	HEXACHLOROCYCLOPENTADIENE	I	4.10E 05	0.00E-01	0.00E-01	4
02	B	140*	P	HEXACHLOROCYCLOPENTADIENE	I	4.90E 05	0.00E-01	0.00E-01	5
04	A	140*	P	2-CHLOROETHYL VINYL ETHER	I	4.10E 05	0.00E-01	0.00E-01	4
04	A	140*	P	2-CHLOROETHYL VINYL ETHER	I	4.90E 05	0.00E-01	0.00E-01	5
04	A	100*	P	4-CHLOROBUTYL ETHYL ETHER	I	4.10E 05	0.00E-01	0.00E-01	4
04	A	100*	P	4-CHLOROBUTYL ETHYL ETHER	I	4.90E 05	0.00E-01	0.00E-01	5
04	A	180*	P	CHLOROPHENYL PHENYL ETHER	I	4.10E 05	0.00E-01	0.00E-01	4
04	A	180*	P	CHLOROPHENYL PHENYL ETHER	I	4.90E 05	0.00E-01	0.00E-01	5
04	B	020*	P	1,1'-DICHLOROMETHYL ETHER	I	4.10E 05	0.00E-01	0.00E-01	4
04	B	020*	P	1,1'-DICHLOROMETHYL ETHER	I	4.90E 05	0.00E-01	0.00E-01	5
04	B	040*	P	1,1'-DICHLORODIETHYL ETHER	I	4.90E 05	0.00E-01	0.00E-01	5
04	B	040*	F	1,1'-DICHLORODIETHYL ETHER	I	4.90E 05	0.00E-01	0.00E-01	5
07	B	060*	P	ISOPHORONE	I	5.60E 06	0.00E-01	0.00E-01	6
07	B	060*	P	ISOPHORONE	I	4.90E 05	0.00E-01	0.00E-01	5
08	D	280*	P	PHTHALATE ESTERS (MW:194-279)	I	5.60E 06	0.00E-01	0.00E-01	6
08	D	280*	P	PHTHALATE ESTERS (MW:194-279)	I	4.90E 05	0.00E-01	0.00E-01	5
08	D	300*	P	DI-2-ETHYLHEXYL PHTHALATE	I	5.60E 06	0.00E-01	0.00E-01	6
08	D	300*	F	DI-2-ETHYLHEXYL PHTHALATE	I	4.90E 05	0.00E-01	0.00E-01	5
08	D	320*	P	BUTYL BENZYL PHTHALATE	I	5.60E 06	0.00E-01	0.00E-01	6
08	D	320*	P	BUTYL BENZYL PHTHALATE	I	4.90E 05	0.00E-01	0.00E-01	5
10	C	140*	P	BENZIDINE	I	5.60E 06	0.00E-01	0.00E-01	6
10	C	140*	P	BENZIDINE					

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PRODUCT GAS PARTICULATE, ECOLOGY IMPACT

DMEG NO.	COMPOUND NAME	TYPE	CONC E-6 G/SCM	DS	WDS G/S	LOCAT
12 A 040* P	N-NITROSODIETHYLAMINE	T	4.90E 05	0.00E-01	0.00E-01	5
12 A 040* P	N-NITROSODIETHYLAMINE	T	3.60E 06	0.00E-01	0.00E-01	6
12 A 060* P	N-NITROSODIPROPYLAMINE	T	4.90E 05	0.00E-01	0.00E-01	5
12 A 060* P	N-NITROSODIPROPYLAMINE	T	3.60E 06	0.00E-01	0.00E-01	6
08 B 060*	B-PROPIOLACTONE	D	0.00E-01	0.00E-01	0.00E-01	0
20 A 120*	2,4,6-TRINITROPHENOL	D	0.00E-01	0.00E-01	0.00E-01	0
15 A 060* P	ETHYL BENZENE	T	8.90E 04	0.00E-01	0.00E-01	2
15 A 060* P	ETHYL BENZENE	T	6.80E 05	0.00E-01	0.00E-01	3
23 B 220*	DIBENZ(A,J)ACRIDINE	D	0.00E-01	0.00E-01	0.00E-01	0
23 B 240*	DIBENZ(A,H)ACRIDINE	D	0.00E-01	0.00E-01	0.00E-01	0
16 A 020* P	CHLOROBENZENE	T	8.90E 04	0.00E-01	0.00E-01	2
16 A 020* P	CHLOROBENZENE	T	6.80E 05	0.00E-01	0.00E-01	3
16 A 100* P	1,2-DICHLOROBENZENE	T	8.90E 04	0.00E-01	0.00E-01	2
16 A 100* P	1,2-DICHLOROBENZENE	T	6.80E 05	0.00E-01	0.00E-01	3
16 A 120* P	1,3-DICHLOROBENZENE	T	8.90E 04	0.00E-01	0.00E-01	2
16 A 120* P	1,3-DICHLOROBENZENE	T	6.80E 05	0.00E-01	0.00E-01	3
16 A 140* P	1,4-DICHLOROBENZENE	T	8.90E 04	0.00E-01	0.00E-01	2
16 A 140* P	1,4-DICHLOROBENZENE	T	6.80E 05	0.00E-01	0.00E-01	3
16 A 160* P	POLYCHLORINATED BENZENES	T	8.90E 04	0.00E-01	0.00E-01	2
16 A 160* P	POLYCHLORINATED BENZENES	T	6.80E 05	0.00E-01	0.00E-01	3
16 A 200* P	CHLORONAPHTHALENES	T	8.90E 04	0.00E-01	0.00E-01	2
16 A 200* P	CHLORONAPHTHALENES	T	6.80E 05	0.00E-01	0.00E-01	3
17 A 020* P	NITROBENZENE	T	4.10E 05	0.00E-01	0.00E-01	4
17 A 020* P	NITROBENZENE	T	4.90E 05	0.00E-01	0.00E-01	5
17 A 081* P	2,6-DINITROTOLUENE	T	4.10E 05	0.00E-01	0.00E-01	4
17 A 081* P	2,6-DINITROTOLUENE	T	4.90E 05	0.00E-01	0.00E-01	5
17 A 084* P	2,4-DINITROTOLUENE	T	4.10E 05	0.00E-01	0.00E-01	4
17 A 084* P	2,4-DINITROTOLUENE	T	4.90E 05	0.00E-01	0.00E-01	5
18 A 020* P	PHENOL	T	4.90E 05	0.00E-01	0.00E-01	5
18 A 020* P	PHENOL	T	3.60E 06	0.00E-01	0.00E-01	6
18 A 142* P	2,4-XYLENOL	T	4.90E 05	0.00E-01	0.00E-01	5
18 A 142* P	2,4-XYLENOL	T	3.60E 06	0.00E-01	0.00E-01	6
19 A 020* P	2-CHLOROPHENOL	T	4.90E 05	0.00E-01	0.00E-01	5
19 A 020* P	2-CHLOROPHENOL	T	3.60E 06	0.00E-01	0.00E-01	6

PRODUCT GAS PARTICULATE, ECOLOGY IMPACT

OMEG NO.		COMPOUND NAME	TYPE	CONC E-6 G/SCM	DS	ADS G/S	LOCAT
19 A 040*	P	2,4-DICHLOROPHENOL	T	4.90E 05	0.00E-01	0.00E-01	5
19 A 040*	P	2,4-DICHLOROPHENOL	T	3.60E 06	0.00E-01	0.00E-01	0
19 A 060*	P	PENTACHLOROPHENOL	T	4.90E 05	0.00E-01	0.00E-01	5
19 A 060*	P	PENTACHLOROPHENOL	T	3.60E 06	0.00E-01	0.00E-01	0
19 B 022*	P	CHLORINATED-M-CRESOLS	T	4.90E 05	0.00E-01	0.00E-01	5
19 B 022*	P	CHLORINATED-M-CRESOLS	T	3.60E 06	0.00E-01	0.00E-01	0
20 A 020*	P	2-NITROPHENOL	T	4.90E 05	0.00E-01	0.00E-01	5
20 A 020*	P	2-NITROPHENOL	T	3.60E 06	0.00E-01	0.00E-01	0
20 A 060*	P	4-NITROPHENOL	T	4.90E 05	0.00E-01	0.00E-01	5
20 A 060*	P	4-NITROPHENOL	T	3.60E 06	0.00E-01	0.00E-01	0
20 A 101*	P	2,4-DINITROPHENOL	T	4.90E 05	0.00E-01	0.00E-01	5
20 A 101*	P	2,4-DINITROPHENOL	T	3.60E 06	0.00E-01	0.00E-01	0
20 B 020*	P	4,6-DINITRO-O-CRESOL	T	4.90E 05	0.00E-01	0.00E-01	5
20 B 020*	P	4,6-DINITRO-O-CRESOL	T	3.60E 06	0.00E-01	0.00E-01	0
21 A 020*	P	NAPHTHALENE	T	4.90E 05	0.00E-01	0.00E-01	5
21 A 020*	P	NAPHTHALENE	T	3.60E 06	0.00E-01	0.00E-01	0
21 A 100*	PH	ACENAPHTHENE	T	8.90E 04	0.00E-01	0.00E-01	2
21 A 100*	PH	ACENAPHTHENE	T	6.80E 05	0.00E-01	0.00E-01	3
21 A 120*	PH	ACENAPHTHYLENE	T	8.90E 04	0.00E-01	0.00E-01	2
21 A 120*	PH	ACENAPHTHYLENE	T	6.80E 05	0.00E-01	0.00E-01	3
21 A 140*	P	ANTHRACENE	T	8.90E 04	0.00E-01	0.00E-01	2
21 A 140*	P	ANTHRACENE	T	6.80E 05	0.00E-01	0.00E-01	3
21 A 180*	P	PHENANTHRENE	T	8.90E 04	0.00E-01	0.00E-01	2
21 A 180*	P	PHENANTHRENE	T	6.80E 05	0.00E-01	0.00E-01	3
21 B 120*	P	CHRYSENE	T	8.90E 04	0.00E-01	0.00E-01	2
21 B 120*	P	CHRYSENE	T	6.80E 05	0.00E-01	0.00E-01	3
21 B 180*	P	PYRENE	T	8.90E 04	0.00E-01	0.00E-01	2
21 B 180*	P	PYRENE	T	6.80E 05	0.00E-01	0.00E-01	3
21 D 080*	PH	BENZO(GHI)PERYLENE	T	8.90E 04	0.00E-01	0.00E-01	2
21 D 080*	PH	BENZO(GHI)PERYLENE	T	6.80E 05	0.00E-01	0.00E-01	3
22 A 020*	PH	FLUORENE	T	8.90E 04	0.00E-01	0.00E-01	2
22 A 020*	PH	FLUORENE	T	6.80E 05	0.00E-01	0.00E-01	3
22 B 040*	P	FLUORANTHENE	T	8.90E 04	0.00E-01	0.00E-01	2
22 B 040*	P	FLUORANTHENE	T	6.80E 05	0.00E-01	0.00E-01	3
			T	8.90E 04	0.00E-01	0.00E-01	2
			T	6.80E 05	0.00E-01	0.00E-01	3

PRODUCT GAS PARTICULATE, ECOLOGY IMPACT

OMEG NO.		COMPOUND NAME	TYPE	CONC E-6 G/SCM	OS	WOS G/S	LOCAT
22 C 020*	P	BENZO(K)FLUORANTHENE	T	8.90E 04	0.00E-01	0.00E-01	2
22 C 020*	P	BENZO(K)FLUORANTHENE	T	6.80E 05	0.00E-01	0.00E-01	3
22 D 020*	P	INDENO(1,2,3-CD)PYRENE	T	8.90E 04	0.00E-01	0.00E-01	2
22 D 020*	P	INDENO(1,2,3-CD)PYRENE	T	6.80E 05	0.00E-01	0.00E-01	3

PRODUCT GAS ORGANIC MODULE COMPOSITE

FLOW RATE = 590 G/S (0.57 SCM/S, DRY BASIS)

5.555 SCM AT 25C AND 760 MM HG SAMPLED

TOTAL ORGANIC LOADING = 8.1 G/SCM

TOTAL TCO = 6.0 G/SCM TOTAL GRAV = 2.2 G/SCM

0.195% ORIGINAL SAMPLE TO LC

LC TCO = 64.7 MG LC GRAV = 24.0 MG LC TOTAL = 88.7 MG

LCCAT	ORGANIC LOADING
1	1600000.0
2	230000.0
3	660000.0
4	130000.0
5	570000.0
6	710000.0
7	2500000.0

FLOW RATE = 590.00

MINIMUM DISCHARGE SEVERITY = .010

STATE: GAS, UNITS IN MICROGRAMS/SCM

IMPACT: HEALTH

EXPERIMENTALY DETERMINED DATA

SPARK SOURCE DATA

PRODUCT GAS ORGANIC MODULE COMPOSITE, HEALTH IMPACT

OMEG NO.				COMPOUND NAME	TYPE	CONC E-6 G/SCM	DS	WDS G/S	LCCAT
04 B 020*	P	W		1,1'-DICHLOROMETHYL ETHER	T	5.70E 05	1.14E 05	6.72E 07	5
04 B 020*	P	W		1,1'-DICHLOROMETHYL ETHER	T	1.30E 05	2.60E 04	1.53E 07	4
02 B 140*	P	W		HEXACHLOROCYCLOPENTADIENE	T	1.60E 06	1.50E 04	8.60E 06	1
12 A 020*	P	W		N-NITROSODIMETHYLAMINE	T	7.10E 05	1.10E 04	6.44E 06	6
08 B 060*		W		B-PROPIOLACTONE	T	2.50E 06	7.81E 03	4.60E 06	7
42 A 070				CARBON MONOXIDE	D	3.00E 08	7.50E 03	4.42E 06	
20 A 120*		W		2,4,6-TRINITROPHENOL	T	7.10E 05	7.10E 03	4.20E 06	6
10 C 100*				1,4-DIAMINOBENZENE	T	7.10E 05	7.10E 03	4.20E 06	6
10 C 040*				AMINOTOLUENES	T	7.10E 05	6.50E 03	3.80E 06	6
10 C 043*				4-AMINOTOLUENE	T	7.10E 05	6.50E 03	3.80E 06	6
10 C 042*				3-AMINOTOLUENE	T	7.10E 05	6.50E 03	3.80E 06	6
10 C 041*				2-AMINOTOLUENE	T	7.10E 05	6.50E 03	3.80E 06	6
12 A 040*	P			N-NITROSODIETHYLAMINE	T	7.10E 05	5.91E 03	3.50E 06	6
10 C 100*				1,4-DIAMINOBENZENE	T	5.70E 05	5.70E 03	3.40E 06	5
23 C 160*		W		DIBENZO(C,G)CARBAZOLE	T	5.70E 05	5.70E 03	3.40E 06	5
10 C 041*				2-AMINOTOLUENE	T	5.70E 05	5.20E 03	3.10E 06	5
10 C 043*				4-AMINOTOLUENE	T	5.70E 05	5.20E 03	3.10E 06	5
10 C 042*				3-AMINOTOLUENE	T	5.70E 05	5.20E 03	3.10E 06	5
12 A 040*	P			N-NITROSODIETHYLAMINE	T	5.70E 05	4.80E 03	2.80E 06	5
23 B 100*		W		DIHYDROACRIDINE	T	7.10E 05	4.43E 03	2.61E 06	6
10 C 220*				2-AMINONAPHTHALENE	T	7.10E 05	4.20E 03	2.50E 06	6
20 B 042*				2,6-DINITRO-P-CRESOL	T	7.10E 05	3.60E 03	2.10E 06	6
20 B 041*				3,5-DINITRO-P-CRESOL	T	7.10E 05	3.60E 03	2.10E 06	6
20 B 020*	P	W		4,6-DINITRO-O-CRESOL	T	7.10E 05	3.60E 03	2.10E 06	6
20 B 040*		W		DINITRO-P-CRESOLS	T	7.10E 05	3.60E 03	2.10E 06	6
10 C 220*				2-AMINONAPHTHALENE	T	5.70E 05	3.40E 03	2.00E 06	5
23 B 240*				DIBENZ(A,H)ACRIDINE	T	7.10E 05	3.22E 03	1.90E 06	6
02 A 380*		W		HEXACHLOROCYCLOHEXANE	T	1.60E 06	3.20E 03	1.90E 06	1
14 B 020		W		DIMETHYL SULFOXIDE	T	2.50E 06	3.10E 03	1.82E 06	7
21 B 106*				7-METHYL BENZO(C)PHENANTHRENE	T	6.60E 05	3.00E 03	1.80E 06	3
21 B 102*				1-METHYL BENZO(C)PHENANTHRENE	T	6.60E 05	3.00E 03	1.80E 06	3
21 B 103*				2-METHYL BENZO(C)PHENANTHRENE	T	6.60E 05	3.00E 03	1.80E 06	3
21 B 108*				2-ETHYL BENZO(C)PHENANTHRENE	T	6.60E 05	3.00E 03	1.80E 06	3
21 B 107*				8-METHYL BENZO(C)PHENANTHRENE	T	6.60E 05	3.00E 03	1.80E 06	3

PRODUCT GAS ORGANIC MODULE COMPOSITE, HEALTH IMPACT

DMEG NO.			COMPOUND NAME	TYPE	CONC E-6 G/SCM	DS	WDS G/S	LCCAT
21 B 104*			5-METHYL BENZO(C)PHENANTHRENE	T	6.60E 05	3.00E 03	1.80E 06	3
21 B 10A*			N-PROPYL BENZO(C)PHENANTHRENE	T	6.60E 05	3.00E 03	1.80E 06	3
21 B 105*			6-METHYL BENZO(C)PHENANTHRENE	T	6.60E 05	3.00E 03	1.80E 06	3
21 B 109*			6-ETHYL BENZO(C)PHENANTHRENE	T	6.60E 05	3.00E 03	1.80E 06	3
21 B 101*			BENZO(C)PHENANTHRENE	T	6.60E 05	3.00E 03	1.80E 06	3
21 B 10B*			ISOPROPYL BENZO(C)PHENANTHRENE	T	6.60E 05	3.00E 03	1.80E 06	3
20 B 042*			2,6-DINITRO-P-CRESOL	T	5.70E 05	2.90E 03	1.70E 06	5
20 B 020*	P	W	4,6-DINITRO-O-CRESOL	T	5.70E 05	2.90E 03	1.70E 06	5
20 B 041*			3,5-DINITRO-P-CRESOL	T	5.70E 05	2.90E 03	1.70E 06	5
23 B 220*			DIBENZ(A,J)ACRIDINE	T	7.10E 05	2.84E 03	1.70E 06	6
08 A 121*			MYRISTIC ACID	T	2.50E 06	2.50E 03	1.50E 06	7
08 A 123*			STEARIC ACID	T	2.50E 06	2.50E 03	1.50E 06	7
08 A 120*		W	SATURATED LONG CHAIN ACIDS (MW:228-285)	T	2.50E 06	2.50E 03	1.50E 06	7
08 A 122*			PALMITIC ACID	T	2.50E 06	2.50E 03	1.50E 06	7
08 B 060*		W	B-PROPIOLACTONE	T	7.10E 05	2.21E 03	1.30E 06	6
02 B 140*	P	W	HEXACHLOROCYCLOPENTADIENE	T	2.30E 05	2.10E 03	1.23E 06	2
10 C 081*			O-ANISIDINE	T	7.10E 05	1.42E 03	8.40E 05	6
10 C 080*			ANISIDINES	T	7.10E 05	1.42E 03	8.40E 05	6
10 C 082*			M-ANISIDINE	T	7.10E 05	1.42E 03	8.40E 05	6
19 A 060*	P	W	PENTACHLOROPHENOL	T	7.10E 05	1.42E 03	8.40E 05	6
10 C 083*			P-ANISIDINE	T	7.10E 05	1.42E 03	8.40E 05	6
13 A 100*		W	BENZENETHIOL	T	7.10E 05	1.42E 03	8.40E 05	6
23 C 160*		W	DIBENZO(C,G)CARBAZOLE	T	1.30E 05	1.30E 03	7.70E 05	4
10 C 200*			1-AMINONAPHTHALENE	T	7.10E 05	1.30E 03	7.50E 05	6
02 A 180*			DIBROMODICHLOROMETHANE	T	1.60E 06	1.14E 03	6.74E 05	1
13 A 100*		W	BENZENETHIOL	T	5.70E 05	1.14E 03	6.72E 05	5
10 C 081*			O-ANISIDINE	T	5.70E 05	1.14E 03	6.72E 05	5
10 C 082*			M-ANISIDINE	T	5.70E 05	1.14E 03	6.72E 05	5
10 C 083*			P-ANISIDINE	T	5.70E 05	1.14E 03	6.72E 05	5
19 A 060*	P	W	PENTACHLOROPHENOL	T	5.70E 05	1.14E 03	6.72E 05	5
10 C 080*			ANISIDINES	T	5.70E 05	1.14E 03	6.72E 05	5
21 B 10B*			ISOPROPYL BENZO(C)PHENANTHRENE	T	5.70E 05	1.14E 03	6.72E 05	5
21 B 102*			1-METHYL BENZO(C)PHENANTHRENE	T	2.30E 05	1.04E 03	6.20E 05	2
21 B 101*			BENZO(C)PHENANTHRENE	T	2.30E 05	1.04E 03	6.20E 05	2

PRODUCT GAS ORGANIC MODULE COMPOSITE, HEALTH IMPACT

DMEG NO.			COMPOUND NAME	TYPE	CONC E-6 G/SCM	DS	WDS G/S	LCCAT
21 B 103*			2-METHYL BENZO(C)PHENANTHRENE	T	2.30E 05	1.04E 03	6.20E 05	2
21 B 109*			6-ETHYL BENZO(C)PHENANTHRENE	T	2.30E 05	1.04E 03	6.20E 05	2
21 B 10A*			N-PROPYL BENZO(C)PHENANTHRENE	T	2.30E 05	1.04E 03	6.20E 05	2
21 B 108*			2-ETHYL BENZO(C)PHENANTHRENE	T	2.30E 05	1.04E 03	6.20E 05	2
21 B 107*			8-METHYL BENZO(C)PHENANTHRENE	T	2.30E 05	1.04E 03	6.20E 05	2
21 B 105*			6-METHYL BENZO(C)PHENANTHRENE	T	2.30E 05	1.04E 03	6.20E 05	2
21 B 106*			7-METHYL BENZO(C)PHENANTHRENE	T	2.30E 05	1.04E 03	6.20E 05	2
21 B 104*			5-METHYL BENZO(C)PHENANTHRENE	T	2.30E 05	1.04E 03	6.20E 05	2
10 C 200*			1-AMINONAPHTHALENE	T	5.70E 05	1.01E 03	6.00E 05	5
13 A 140*			PERCHLOROMETHANETHIOL	T	7.10E 05	8.90E 02	5.23E 05	6
08 A 140*			OLEIC ACID	T	2.50E 06	7.60E 02	4.50E 05	7
13 A 140*			PERCHLOROMETHANETHIOL	T	5.70E 05	7.12E 02	4.20E 05	5
08 A 120*		W	SATURATED LONG CHAIN ACIDS (MW:228-285)	T	7.10E 05	7.10E 02	4.20E 05	6
08 A 121*			MYRISTIC ACID	T	7.10E 05	7.10E 02	4.20E 05	6
08 C 060*		W	6-HEXANELACTAM	T	7.10E 05	7.10E 02	4.20E 05	6
08 A 122*			PALMITIC ACID	T	7.10E 05	7.10E 02	4.20E 05	6
10 C 140*	P		BENZIDINE	T	7.10E 05	7.10E 02	4.20E 05	6
08 A 123*			STEARIC ACID	T	7.10E 05	7.10E 02	4.20E 05	6
21 D 060*			DIBENZO(A,L)PYRENE	T	6.60E 05	6.00E 02	3.54E 05	3
47 A 060	P		AMMONIA	D	1.10E 07	5.91E 02	3.50E 05	
08 A 120*		W	SATURATED LONG CHAIN ACIDS (MW:228-285)	T	5.70E 05	5.70E 02	3.40E 05	5
08 A 122*			PALMITIC ACID	T	5.70E 05	5.70E 02	3.40E 05	5
08 A 123*			STEARIC ACID	T	5.70E 05	5.70E 02	3.40E 05	5
08 A 121*			MYRISTIC ACID	T	5.70E 05	5.70E 02	3.40E 05	5
08 C 060*		W	6-HEXANELACTAM	T	5.70E 05	5.70E 02	3.40E 05	5
17 B 040*		W	1-CHLORO-2-NITROBENZENE	T	5.70E 05	5.70E 02	3.40E 05	5
10 C 140*	P		BENZIDINE	T	5.70E 05	5.70E 02	3.40E 05	5
17 B 060*		W	1-CHLORO-4-NITROBENZENE	T	5.70E 05	5.70E 02	3.40E 05	5
12 B 020*		W	N-METHYL-N-NITROSOANILINE	T	7.10E 05	5.50E 02	3.22E 05	6
10 C 120*			4-AMINOBIPHENYL	T	7.10E 05	5.50E 02	3.22E 05	6
20 A 100*			DINITROPHENOLS	T	7.10E 05	5.10E 02	3.00E 05	6
20 A 102*			2,5-DINITROPHENOL	T	7.10E 05	5.10E 02	3.00E 05	6
20 A 101*	P		2,4-DINITROPHENOL	T	7.10E 05	5.10E 02	3.00E 05	6
20 A 080*			2-AMINO-4,6-DINITROPHENOL	T	7.10E 05	5.10E 02	3.00E 05	6

PRODUCT GAS ORGANIC MODULE COMPOSITE, HEALTH IMPACT

DMEG NO.			COMPOUND NAME	TYPE	CONC E-6 G/SCM	DS	WDS G/S	LOCAT
20 A 103*			2,6-DINITROPHENOL	I	7.10E 05	5.10E 02	3.00E 05	6
02 A 380*		W	HEXACHLOROCYCLOHEXANE	T	2.30E 05	4.60E 02	2.71E 05	2
12 B 020*		W	N-METHYL-N-NITROSOANILINE	T	5.70E 05	4.40E 02	2.60E 05	5
17 A 060*		W	4-NITROBIPHENYL	T	5.70E 05	4.40E 02	2.60E 05	5
10 C 120*			4-AMINOBIPHENYL	T	5.70E 05	4.40E 02	2.60E 05	5
08 A 103*			CAPRIC ACID	T	5.70E 05	4.40E 02	2.60E 05	5
08 A 104*			LAURIC ACID	T	2.50E 06	4.31E 02	2.54E 05	7
08 A 102*			CAPRYLIC ACID	T	2.50E 06	4.31E 02	2.54E 05	7
08 A 100*			SATURATED LONG CHAIN ACIDS (MW:116-201)	T	2.50E 06	4.31E 02	2.54E 05	7
08 A 101*			CAPROIC ACID	T	2.50E 06	4.31E 02	2.54E 05	7
22 C 020*	P		BENZO(K)FLUORANTHENE	T	2.50E 06	4.31E 02	2.54E 05	7
22 D 020*	P	W	INDENO(1,2,3-CD)PYRENE	T	6.60E 05	4.12E 02	2.43E 05	3
21 A 180*	P	W	PHENANTHRENE	T	6.60E 05	4.12E 02	2.43E 05	3
20 A 100*			DINITROPHENOLS	T	6.60E 05	4.12E 02	2.43E 05	3
20 A 103*			2,6-DINITROPHENOL	T	5.70E 05	4.10E 02	2.40E 05	5
20 A 101*	P		2,4-DINITROPHENOL	T	5.70E 05	4.10E 02	2.40E 05	5
20 A 080*			2-AMINO-4,6-DINITROPHENOL	T	5.70E 05	4.10E 02	2.40E 05	5
20 A 102*			2,5-DINITROPHENOL	T	5.70E 05	4.10E 02	2.40E 05	5
02 B 120*	P		HEXACHLOROBUTADIENE	T	5.70E 05	4.10E 02	2.40E 05	5
17 A 082*			3,4-DINITROTOLUENE	T	1.60E 06	3.90E 02	2.30E 05	1
17 A 083*			2,3-DINITROTOLUENE	T	5.70E 05	3.80E 02	2.24E 05	5
17 A 080*			DINITROTOLUENES	T	5.70E 05	3.80E 02	2.24E 05	5
17 A 084*	P		2,4-DINITROTOLUENE	T	5.70E 05	3.80E 02	2.24E 05	5
17 A 086*			3,5-DINITROTOLUENE	T	5.70E 05	3.80E 02	2.24E 05	5
17 A 081*	P		2,6-DINITROTOLUENE	T	5.70E 05	3.80E 02	2.24E 05	5
17 A 085*			2,5-DINITROTOLUENE	T	5.70E 05	3.80E 02	2.24E 05	5
21 B 142*			5-METHYL CHRYSENE	T	6.60E 05	3.70E 02	2.20E 05	3
21 B 141*			4-METHYL CHRYSENE	T	6.60E 05	3.70E 02	2.20E 05	3
21 B 140*			METHYL CHRYSENES	T	6.60E 05	3.70E 02	2.20E 05	3
18 B 060*		W	1,4-DIHYDROXYBENZENE	T	7.10E 05	3.60E 02	2.10E 05	6
15 B 060*		W	4,4'-DIPHENYLBIPHENYL	T	6.60E 05	3.50E 02	1.94E 05	3
02 A 160*	P		BROMOFORM	T	1.60E 06	3.20E 02	1.90E 05	1
21 B 120*	P		CHRYSENE	T	6.60E 05	3.00E 02	1.80E 05	3
12 A 060*	P		N-NITROSODIPROPYLAMINE	T	7.10E 05	3.00E 02	1.74E 05	6

PRODUCT GAS ORGANIC MODULE COMPOSITE, HEALTH IMPACT

OMEG NO.				COMPOUND NAME	TYPE	CONC E-6 G/SCM	US	WDS G/S	LCCAT
04 A 050*		W		EPICHLORHYDRIN	T	5.70E 05	2.90E 02	1.70E 05	5
04 A 040*		W		2-CHLORO-1,2-EPOXYPROPANE	T	5.70E 05	2.90E 02	1.70E 05	5
04 A 060*		W		1-CHLORO-1,3-EPOXYPROPANE	T	5.70E 05	2.90E 02	1.70E 05	5
18 B 060*		W		1,4-DIHYDROXYBENZENE	T	5.70E 05	2.90E 02	1.70E 05	5
21 C 160*				PICENE	T	6.60E 05	2.64E 02	1.60E 05	3
12 A 060*	P			N-NITROSODIPROPYLAMINE	T	5.70E 05	2.40E 02	1.40E 05	5
15 A 160*		W		BIPHENYL	T	2.30E 05	2.30E 02	1.40E 05	2
21 C 120*				BENZO(E)PYRENE	T	6.60E 05	2.20E 02	1.30E 05	3
08 A 140*				OLEIC ACID	T	7.10E 05	2.20E 02	1.30E 05	6
23 C 020*				PYRROLE	T	5.70E 05	2.11E 02	1.24E 05	5
21 D 060*				DIBENZO(A,L)PYRENE	T	2.30E 05	2.10E 02	1.23E 05	2
09 A 120*		W		TETRAMETHYLSUCCINONITRILE	T	5.70E 05	1.90E 02	1.12E 05	5
21 D 020*				DIBENZO(A,H)PYRENE	T	6.60E 05	1.80E 02	1.10E 05	3
08 A 140*				OLEIC ACID	T	5.70E 05	1.72E 02	1.01E 05	5
23 D 020*		W		BENZOTHIAZOLE	T	7.10E 05	1.70E 02	9.74E 04	6
02 A 180*				DIBROMODICHLOROMETHANE	T	2.30E 05	1.64E 02	9.70E 04	2
02 A 320*	P			HEXACHLOROETHANE	T	1.60E 06	1.60E 02	9.44E 04	1
03 B 020*		W		1,4-DIOXANE	T	5.70E 05	1.60E 02	9.34E 04	5
03 B 040*		W		1,3-DIOXANE	T	5.70E 05	1.60E 02	9.34E 04	5
23 D 040*				METHYL BENZOTHIAZOLE	T	7.10E 05	1.51E 02	8.91E 04	6
02 B 100*	P			DICHLOROPROPENES	T	1.60E 06	1.50E 02	8.60E 04	1
02 B 103*				CIS-1,3-DICHLOROPROPENE	T	1.60E 06	1.50E 02	8.60E 04	1
02 B 104*				TRANS-1,3-DICHLOROPROPENE	T	1.60E 06	1.50E 02	8.60E 04	1
22 D 020*	P	W		INDENO(1,2,3-CD)PYRENE	T	2.30E 05	1.43E 02	8.50E 04	2
22 C 020*	P			BENZO(K)FLUORANTHENE	T	2.30E 05	1.43E 02	8.50E 04	2
21 A 180*	P	W		PHENANTHRENE	T	2.30E 05	1.43E 02	8.50E 04	2
08 D 281*				DIMETHYL PHTHALATE	T	7.10E 05	1.42E 02	8.40E 04	6
08 D 300*	P			DI-2-ETHYLHEXYL PHTHALATE	T	7.10E 05	1.42E 02	8.40E 04	6
08 D 283*				DI-N-BUTYL PHTHALATE	T	7.10E 05	1.42E 02	8.40E 04	6
08 D 280*	P	W		PHTHALATE ESTERS (MW:194-279)	T	7.10E 05	1.42E 02	8.40E 04	6
08 D 282*				DIETHYL PHTHALATE	T	7.10E 05	1.42E 02	8.40E 04	6
23 D 020*		W		BENZOTHIAZOLE	T	5.70E 05	1.32E 02	7.82E 04	5
16 B 020*		W		A-CHLOROTOLUENE	T	6.60E 05	1.32E 02	7.80E 04	3
17 B 060*		W		1-CHLORO-4-NITROBENZENE	T	1.30E 05	1.30E 02	7.70E 04	4

PRODUCT GAS ORGANIC MODULE COMPOSITE, HEALTH IMPACT

DMEG NO.		COMPOUND NAME	TYPE	CONC E-6 G/SCM	DS	WDS G/S	LCCAT
17 B 040*	W	1-CHLORO-2-NITROBENZENE	T	1.30E 05	1.30E 02	7.70E 04	4
21 B 141*		4-METHYL CHRYSENE	T	2.30E 05	1.30E 02	7.53E 04	2
21 B 142*		5-METHYL CHRYSENE	T	2.30E 05	1.30E 02	7.53E 04	2
21 B 140*		METHYL CHRYSENES	T	2.30E 05	1.30E 02	7.53E 04	2
08 A 102*		CAPRYLIC ACID	T	7.10E 05	1.22E 02	7.22E 04	6
08 A 101*		CAPROIC ACID	T	7.10E 05	1.22E 02	7.22E 04	6
08 A 104*		LAURIC ACID	T	7.10E 05	1.22E 02	7.22E 04	6
08 A 103*		CAPRIC ACID	T	7.10E 05	1.22E 02	7.22E 04	6
08 A 100*		SATURATED LONG CHAIN ACIDS (MW:116-201)	T	7.10E 05	1.22E 02	7.22E 04	6
23 D 040*		METHYL BENZOTHIAZOLE	T	5.70E 05	1.21E 02	7.20E 04	5
23 A 102*		3-CHLOROPYRIDINE	T	7.10E 05	1.20E 02	7.10E 04	6
23 A 101*		2-CHLOROPYRIDINE	T	7.10E 05	1.20E 02	7.10E 04	6
23 A 100*	W	CHLOROPYRIDINES	T	7.10E 05	1.20E 02	7.10E 04	6
23 A 103*		4-CHLOROPYRIDINE	T	7.10E 05	1.20E 02	7.10E 04	6
10 A 060*		ETHANOLAMINE	T	7.10E 05	1.20E 02	7.00E 04	6
15 B 060*	W	4,4'-DIPHENYLBIPHENYL	T	2.30E 05	1.20E 02	6.80E 04	2
17 A 020*	P	NITROBENZENE	T	5.70E 05	1.14E 02	6.72E 04	5
08 D 282*		DIETHYL PHTHALATE	T	5.70E 05	1.14E 02	6.72E 04	5
08 D 280*	P W	PHTHALATE ESTERS (MW:194-279)	T	5.70E 05	1.14E 02	6.72E 04	5
08 D 281*		DIMETHYL PHTHALATE	T	5.70E 05	1.14E 02	6.72E 04	5
08 D 283*		DI-N-BUTYL PHTHALATE	T	5.70E 05	1.14E 02	6.72E 04	5
08 D 300*	P	DI-2-ETHYLHEXYL PHTHALATE	T	5.70E 05	1.14E 02	6.72E 04	5
08 A 080*		VALERIC ACID	T	2.50E 06	1.10E 02	6.41E 04	7
21 B 120*	P	CHRYSENE	T	2.30E 05	1.04E 02	6.20E 04	2
53 A 090		HYDROGEN SULFIDE	D	1.54E 06	1.02E 02	6.10E 04	
22 C 040*		BENZO(J)FLUORANTHENE	T	6.60E 05	1.01E 02	6.00E 04	3
19 A 040*	P	2,4-DICHLOROPHENOL	T	7.10E 05	1.01E 02	6.00E 04	6
08 A 040*		ACETIC ACID	T	2.50E 06	1.00E 02	5.90E 04	7
17 A 060*	W	4-NITROBIPHENYL	T	1.30E 05	1.00E 02	5.90E 04	4
08 A 104*		LAURIC ACID	T	5.70E 05	9.82E 01	5.80E 04	5
08 A 102*		CAPRYLIC ACID	T	5.70E 05	9.82E 01	5.80E 04	5
08 A 100*		SATURATED LONG CHAIN ACIDS (MW:116-201)	T	5.70E 05	9.82E 01	5.80E 04	5
08 A 101*		CAPROIC ACID	T	5.70E 05	9.82E 01	5.80E 04	5
08 A 103*		CAPRIC ACID	T	5.70E 05	9.82E 01	5.80E 04	5

PRODUCT GAS ORGANIC MODULE COMPOSITE, HEALTH IMPACT

DMEG NO.		COMPOUND NAME	TYPE	CONC E-6 G/SCM	DS	WDS G/S	LCCAT
23 A 101*		2-CHLOROPYRIDINE	T	5.70E 05	9.70E 01	5.70E 04	5
23 A 103*		4-CHLOROPYRIDINE	T	5.70E 05	9.70E 01	5.70E 04	5
23 A 102*		3-CHLOROPYRIDINE	T	5.70E 05	9.70E 01	5.70E 04	5
23 A 100*	W	CHLOROPYRIDINES	T	5.70E 05	9.70E 01	5.70E 04	5
16 B 043*		1,4-BIS(CHLOROMETHYL)BENZENE	T	6.60E 05	9.60E 01	5.64E 04	3
16 B 042*		1,3-BIS(CHLOROMETHYL)BENZENE	T	6.60E 05	9.60E 01	5.64E 04	3
16 B 041*		1,2-BIS(CHLOROMETHYBENZENE	T	6.60E 05	9.60E 01	5.64E 04	3
16 B 040*		BIS(CHLOROMETHYL)BENZENES	T	6.60E 05	9.60E 01	5.64E 04	3
10 A 060*		ETHANOLAMINE	T	5.70E 05	9.50E 01	5.60E 04	5
23 C 180*		DIBENZO(A,G)CARBAZOLE	T	5.70E 05	9.50E 01	5.60E 04	5
21 C 160*		PICENE	T	2.30E 05	9.20E 01	5.42E 04	2
17 A 081*	P	2,6-DINITROTOLUENE	T	1.30E 05	8.70E 01	5.11E 04	4
17 A 085*		2,5-DINITROTOLUENE	T	1.30E 05	8.70E 01	5.11E 04	4
17 A 082*		3,4-DINITROTOLUENE	T	1.30E 05	8.70E 01	5.11E 04	4
17 A 086*		3,5-DINITROTOLUENE	T	1.30E 05	8.70E 01	5.11E 04	4
17 A 084*	P	2,4-DINITROTOLUENE	T	1.30E 05	8.70E 01	5.11E 04	4
17 A 083*		2,3-DINITROTOLUENE	T	1.30E 05	8.70E 01	5.11E 04	4
17 A 080*		DINITROTOLUENES	T	1.30E 05	8.70E 01	5.11E 04	4
19 A 040*	P	2,4-DICHLOROPHENOL	T	5.70E 05	8.14E 01	4.80E 04	5
08 A 060*		MALEIC ACID	T	2.50E 06	7.81E 01	4.60E 04	7
21 C 120*		BENZO(E)PYRENE	T	2.30E 05	7.70E 01	4.52E 04	2
15 B 163*		P-TERPHENYL	T	6.60E 05	7.33E 01	4.32E 04	3
15 B 161*		O-TERPHENYL	T	6.60E 05	7.33E 01	4.32E 04	3
15 B 160*		TERPHENYLS	T	6.60E 05	7.33E 01	4.32E 04	3
15 B 162*		M-TERPHENYL	T	6.60E 05	7.33E 01	4.32E 04	3
18 A 080*	W	ETHYLPHENOLS	T	7.10E 05	7.10E 01	4.20E 04	6
18 A 043*		P-CRESOL	T	7.10E 05	7.10E 01	4.20E 04	6
18 A 082*		M-ETHYLPHENOL	T	7.10E 05	7.10E 01	4.20E 04	6
18 A 083*		P-ETHYLPHENOL	T	7.10E 05	7.10E 01	4.20E 04	6
18 A 041*		M-CRESOL	T	7.10E 05	7.10E 01	4.20E 04	6
18 A 040*	W	CRESOLS	T	7.10E 05	7.10E 01	4.20E 04	6
18 A 042*		O-CRESOL	T	7.10E 05	7.10E 01	4.20E 04	6
18 A 081*		O-ETHYLPHENOL	T	7.10E 05	7.10E 01	4.20E 04	6
06 A 020*	W	ETHYLENE GLYCOL	T	7.10E 05	7.10E 01	4.20E 04	6

PRODUCT GAS ORGANIC MODULE COMPOSITE, HEALTH IMPACT

DMEG NO.			COMPOUND NAME	TYPE	CONC E-6 G/SCM	DS	WDS G/S	LCCAT
26 A 020		W	TRIETHYL PHOSPHATE	T	2.50E 06	6.94E 01	4.10E 04	7
08 B 080*			Y-BUTYROLACTONE	T	2.50E 06	6.94E 01	4.10E 04	7
21 C 060*			DIBENZ(A,C)ANTHRACENE	T	6.60E 05	6.70E 01	3.93E 04	3
04 A 050*		W	EPICHLORHYDRIN	T	1.30E 05	6.50E 01	3.83E 04	4
04 A 040*		W	2-CHLORO-1,2-EPOXYPROPANE	T	1.30E 05	6.50E 01	3.83E 04	4
04 A 060*		W	1-CHLORO-1,3-EPOXYPROPANE	T	1.30E 05	6.50E 01	3.83E 04	4
23 B 200*			BENZ(C)ACRIDINE	T	7.10E 05	6.50E 01	3.80E 04	6
14 A 020		W	BENZENESULFONIC ACID	T	2.50E 06	6.30E 01	3.70E 04	7
08 B 041*			2-HYDROXYBENZOIC ACID	T	2.50E 06	6.30E 01	3.70E 04	7
21 D 020*			DIBENZO(A,H)PYRENE	T	2.30E 05	6.21E 01	3.70E 04	2
07 B 100*		W	CAMPHOR	T	7.10E 05	5.91E 01	3.50E 04	6
18 A 040*		W	CRESOLS	T	5.70E 05	5.70E 01	3.40E 04	5
18 A 080*		W	ETHYLPHENOLS	T	5.70E 05	5.70E 01	3.40E 04	5
18 A 043*			P-CRESOL	T	5.70E 05	5.70E 01	3.40E 04	5
18 A 041*			M-CRESOL	T	5.70E 05	5.70E 01	3.40E 04	5
18 A 083*			P-ETHYLPHENOL	T	5.70E 05	5.70E 01	3.40E 04	5
06 A 020*		W	ETHYLENE GLYCOL	T	5.70E 05	5.70E 01	3.40E 04	5
18 A 042*			O-CRESOL	T	5.70E 05	5.70E 01	3.40E 04	5
18 A 082*			M-ETHYLPHENOL	T	5.70E 05	5.70E 01	3.40E 04	5
18 A 081*			O-ETHYLPHENOL	T	5.70E 05	5.70E 01	3.40E 04	5
02 B 120*	P		HEXACHLOROBUTADIENE	T	2.30E 05	5.60E 01	3.30E 04	2
16 A 160*	P		POLYCHLORINATED BENZENES	T	6.60E 05	5.50E 01	3.24E 04	3
16 A 162*			HEXACHLOROBENZENE	T	6.60E 05	5.50E 01	3.24E 04	3
16 A 161*			1,2,4-TRICHLOROBENZENE	T	6.60E 05	5.50E 01	3.24E 04	3
18 A 144*			2,6-XYLENOL	T	7.10E 05	5.50E 01	3.22E 04	6
18 A 143*			2,5-XYLENOL	T	7.10E 05	5.50E 01	3.22E 04	6
18 A 140*			XYLENOLS	T	7.10E 05	5.50E 01	3.22E 04	6
18 A 146*			3,4-XYLENOL	T	7.10E 05	5.50E 01	3.22E 04	6
18 A 145*			3,5-XYLENOL	T	7.10E 05	5.50E 01	3.22E 04	6
18 A 141*			2,3-XYLENOL	T	7.10E 05	5.50E 01	3.22E 04	6
18 A 142*	P		2,4-XYLENOL	T	7.10E 05	5.50E 01	3.22E 04	6
01 B 220		W	DICYCLOPENTADIENE	T	1.60E 06	5.33E 01	3.14E 04	1
04 B 100*			2,2'-DICHLORODIISOPROPYL ETHER	T	5.70E 05	5.20E 01	3.10E 04	5
23 B 200*			BENZ(C)ACRIDINE	T	5.70E 05	5.20E 01	3.10E 04	5

PRODUCT GAS ORGANIC MODULE COMPOSITE, HEALTH IMPACT

DMEG NO.			COMPOUND NAME	TYPE	CONC E-6 G/SCM	DS	WDS G/S	LCCAT
23 C 040*			INDOLE	T	5.70E 05	5.20E 01	3.10E 04	5
04 A 140*	P		2-CHLOROETHYL VINYL ETHER	T	5.70E 05	5.20E 01	3.10E 04	5
08 D 080*			METHYL METHACRYLATE	T	7.10E 05	5.10E 01	3.00E 04	6
23 C 020*			PYRROLE	T	1.30E 05	4.81E 01	2.84E 04	4
23 C 140*			DIBENZO(A,I)CARBAZOLE	T	5.70E 05	4.80E 01	2.80E 04	5
07 B 100*		W	CAMPHOR	T	5.70E 05	4.80E 01	2.80E 04	5
23 A 020*			PYRIDINE	T	7.10E 05	4.73E 01	2.80E 04	6
02 A 160*	P		BROMOFORM	T	2.30E 05	4.60E 01	2.71E 04	2
16 B 020*		W	A-CHLOROTOLUENE	T	2.30E 05	4.60E 01	2.71E 04	2
23 B 021*			QUINOLINE	T	7.10E 05	4.43E 01	2.61E 04	6
20 A 060*	P		4-NITROPHENOL	T	7.10E 05	4.43E 01	2.61E 04	6
23 B 020*			QUINOLINES	T	7.10E 05	4.43E 01	2.61E 04	6
23 B 022*			ISOQUINOLINE	T	7.10E 05	4.43E 01	2.61E 04	6
18 A 141*			2,3-XYLENOL	T	5.70E 05	4.40E 01	2.60E 04	5
18 A 143*			2,5-XYLENOL	T	5.70E 05	4.40E 01	2.60E 04	5
18 A 140*			XYLENOLS	T	5.70E 05	4.40E 01	2.60E 04	5
18 A 144*			2,6-XYLENOL	T	5.70E 05	4.40E 01	2.60E 04	5
18 A 142*	P		2,4-XYLENOL	T	5.70E 05	4.40E 01	2.60E 04	5
18 A 145*			3,5-XYLENOL	T	5.70E 05	4.40E 01	2.60E 04	5
18 A 146*			3,4-XYLENOL	T	5.70E 05	4.40E 01	2.60E 04	5
09 A 120*		W	TETRAMETHYLSUCCINONITRILE	T	1.30E 05	4.33E 01	2.60E 04	4
21 C 040*			BENZO(G)CHRYSENE	T	6.60E 05	4.12E 01	2.43E 04	3
08 D 080*			METHYL METHACRYLATE	T	5.70E 05	4.10E 01	2.40E 04	5
23 A 145*			3,4-DIMETHYLPYRIDINE	T	7.10E 05	3.94E 01	2.32E 04	6
05 B 100*		W	1-PHENYLETHANOL	T	7.10E 05	3.94E 01	2.32E 04	6
23 A 140*			DISUBSTITUTED POLYSUBSTITUTED ALKYL PYRIDINES	T	7.10E 05	3.94E 01	2.32E 04	6
23 A 144*			2,6-DIMETHYLPYRIDINE	T	7.10E 05	3.94E 01	2.32E 04	6
23 A 141*			2,3-DIMETHYLPYRIDINE	T	7.10E 05	3.94E 01	2.32E 04	6
23 A 146*			2,3,4,6-TETRAMETHYL PYRIDINE	T	7.10E 05	3.94E 01	2.32E 04	6
23 A 142*			2,4-DIMETHYLPYRIDINE	T	7.10E 05	3.94E 01	2.32E 04	6
23 A 143*			2,5-DIMETHYLPYRIDINE	T	7.10E 05	3.94E 01	2.32E 04	6
23 A 020*			PYRIDINE	T	5.70E 05	3.80E 01	2.24E 04	5
18 A 020*	P		PHENOL	T	7.10E 05	3.73E 01	2.20E 04	6
10 C 020*			ANILINE	T	7.10E 05	3.73E 01	2.20E 04	6

PRODUCT GAS ORGANIC MODULE COMPOSITE, HEALTH IMPACT

OMEG NO.			COMPOUND NAME	TYPE	CONC E-6 G/SCM	DS	WDS G/S	LCCAT
03 B 040*		W	1,3-DIOXANE	T	1.30E 05	3.61E 01	2.13E 04	4
03 B 020*		W	1,4-DIOXANE	T	1.30E 05	3.61E 01	2.13E 04	4
23 B 022*			ISOQUINOLINE	T	5.70E 05	3.60E 01	2.10E 04	5
23 B 020*			QUINOLINES	T	5.70E 05	3.60E 01	2.10E 04	5
23 B 021*			QUINOLINE	T	5.70E 05	3.60E 01	2.10E 04	5
20 A 060*	P		4-NITROPHENOL	T	5.70E 05	3.60E 01	2.10E 04	5
02 A 140*	P		DIBROMOCHLOROMETHANE	T	1.60E 06	3.60E 01	2.10E 04	1
18 B 020*			CATECHOL	T	7.10E 05	3.60E 01	2.10E 04	6
20 A 040*			3-NITROPHENOL	T	7.10E 05	3.60E 01	2.10E 04	6
22 C 040*			BENZO(J)FLUORANTHENE	T	2.30E 05	3.53E 01	2.10E 04	2
16 B 043*			1,4-BIS(CHLOROMETHYL)BENZENE	T	2.30E 05	3.53E 01	2.00E 04	2
16 B 042*			1,3-BIS(CHLOROMETHYL)BENZENE	T	2.30E 05	3.53E 01	2.00E 04	2
16 B 040*			BIS(CHLOROMETHYL)BENZENES	T	2.30E 05	3.53E 01	2.00E 04	2
16 B 041*			1,2-BIS(CHLOROMETHYBENZENE	T	2.30E 05	3.53E 01	2.00E 04	2
23 A 146*			2,3,4,6-TETRAMETHYL PYRIDINE	T	5.70E 05	3.20E 01	1.90E 04	5
23 A 141*			2,3-DIMETHYLPYRIDINE	T	5.70E 05	3.20E 01	1.90E 04	5
23 A 145*			3,4-DIMETHYLPYRIDINE	T	5.70E 05	3.20E 01	1.90E 04	5
23 A 143*			2,5-DIMETHYLPYRIDINE	T	5.70E 05	3.20E 01	1.90E 04	5
23 A 144*			2,6-DIMETHYLPYRIDINE	T	5.70E 05	3.20E 01	1.90E 04	5
05 B 100*		W	1-PHENYLETHANOL	T	5.70E 05	3.20E 01	1.90E 04	5
23 A 140*			DISUBSTITUTED POLYSUBSTITUTED ALKYL PYRIDINES	T	5.70E 05	3.20E 01	1.90E 04	5
23 A 142*			2,4-DIMETHYLPYRIDINE	T	5.70E 05	3.20E 01	1.90E 04	5
18 A 102*			P-PHENYLPHENOL	T	7.10E 05	3.10E 01	1.82E 04	6
18 A 100*			PHENYLPHENOLS	T	7.10E 05	3.10E 01	1.82E 04	6
08 A 080*			VALERIC ACID	T	7.10E 05	3.10E 01	1.82E 04	6
18 A 101*			O-PHENYLPHENOL	T	7.10E 05	3.10E 01	1.82E 04	6
19 B 023*			CHLORINATED-P-CRESOLS	T	7.10E 05	3.10E 01	1.82E 04	6
19 B 021*			CHLORINATED-O-CRESOLS	T	7.10E 05	3.10E 01	1.82E 04	6
19 B 022*	P		CHLORINATED-M-CRESOLS	T	7.10E 05	3.10E 01	1.82E 04	6
23 B 260*			DIBENZ(C,H)ACRIDINE	T	7.10E 05	3.10E 01	1.82E 04	6
18 A 103*			M-PHENYLPHENOL	T	7.10E 05	3.10E 01	1.82E 04	6
19 B 020*		W	CHLORINATED CRESOLS	T	7.10E 05	3.10E 01	1.82E 04	6
18 A 020*	P		PHENOL	T	5.70E 05	3.00E 01	1.80E 04	5
10 C 020*			ANILINE	T	5.70E 05	3.00E 01	1.80E 04	5

PRODUCT GAS ORGANIC MODULE COMPOSITE, HEALTH IMPACT

DMEG NO.			COMPOUND NAME	TYPE	CONC E-6 G/SCM	DS	WDS G/S	LCCAT
23 C 120*			BENZO(A)CARBAZOLE	T	5.70E 05	3.00E 01	1.80E 04	5
18 A 162*			4-ETHYL-O-CRESOL	T	7.10E 05	3.00E 01	1.74E 04	6
18 A 163*			2-ETHYL-P-CRESOL	T	7.10E 05	3.00E 01	1.74E 04	6
18 A 161*			6-ETHYL-M-CRESOL	T	7.10E 05	3.00E 01	1.74E 04	6
18 A 160*			ETHYL CRESOLS	T	7.10E 05	3.00E 01	1.74E 04	6
02 A 360*			BROMOBUTANES	T	1.60E 06	2.90E 01	1.70E 04	1
02 A 361*			1-BROMOBUTANE	T	1.60E 06	2.90E 01	1.70E 04	1
20 A 040*			3-NITROPHENOL	T	5.70E 05	2.90E 01	1.70E 04	5
18 B 020*			CATECHOL	T	5.70E 05	2.90E 01	1.70E 04	5
10 D 020*		W	N,N-DIMETHYLANILINE	T	7.10E 05	2.83E 01	1.70E 04	6
07 B 080*	P		ISOPHORONE	T	7.10E 05	2.83E 01	1.70E 04	6
10 C 060*			DIMETHYLANILINES	T	7.10E 05	2.83E 01	1.70E 04	6
10 C 065*			3,4-XYLIDINE	T	7.10E 05	2.83E 01	1.70E 04	6
10 C 062*			2,4-XYLIDINE	T	7.10E 05	2.83E 01	1.70E 04	6
10 C 063*			2,5-XYLIDINE	T	7.10E 05	2.83E 01	1.70E 04	6
10 C 066*			3,5-XYLIDINE	T	7.10E 05	2.83E 01	1.70E 04	6
10 A 080*			1,2-DIAMINOETHANE	T	7.10E 05	2.83E 01	1.70E 04	6
10 C 061*			2,3-XYLIDINE	T	7.10E 05	2.83E 01	1.70E 04	6
10 C 064*			2,6-XYLIDINE	T	7.10E 05	2.83E 01	1.70E 04	6
08 A 040*			ACETIC ACID	T	7.10E 05	2.83E 01	1.70E 04	6
17 A 020*	P		NITROBENZENE	T	1.30E 05	2.60E 01	1.53E 04	4
09 A 100*			1,3-DICYANO-1-HYDROXYBUTANE	T	5.70E 05	2.60E 01	1.52E 04	5
15 B 163*			P-TERPHENYL	T	2.30E 05	2.60E 01	1.50E 04	2
15 B 160*			TERPHENYLS	T	2.30E 05	2.60E 01	1.50E 04	2
15 B 162*			M-TERPHENYL	T	2.30E 05	2.60E 01	1.50E 04	2
15 B 161*			O-TERPHENYL	T	2.30E 05	2.60E 01	1.50E 04	2
23 C 100*			METHYLCARBAZOLES	T	5.70E 05	2.50E 01	1.50E 04	5
19 B 021*			CHLORINATED-O-CRESOLS	T	5.70E 05	2.50E 01	1.50E 04	5
19 B 020*		W	CHLORINATED CRESOLS	T	5.70E 05	2.50E 01	1.50E 04	5
25 A 042*			3-METHYLTHIOPHENE	T	5.70E 05	2.50E 01	1.50E 04	5
18 A 103*			M-PHENYLPHENOL	T	5.70E 05	2.50E 01	1.50E 04	5
18 A 100*			PHENYLPHENOLS	T	5.70E 05	2.50E 01	1.50E 04	5
25 B 040*		W	BENZO(B)THIOPHENE	T	5.70E 05	2.50E 01	1.50E 04	5
18 A 102*			P-PHENYLPHENOL	T	5.70E 05	2.50E 01	1.50E 04	5

PRODUCT GAS ORGANIC MODULE COMPOSITE, HEALTH IMPACT

DMEG NO.		COMPOUND NAME	TYPE	CONC E-6 G/SCM	DS	WDS G/S	LCCAT
23 C 101*		3-METHYLCARBAZOLE	T	5.70E 05	2.50E 01	1.50E 04	5
25 A 040*		METHYLTHIOPHENES	T	5.70E 05	2.50E 01	1.50E 04	5
25 A 041*		2-METHYLTHIOPHENE	T	5.70E 05	2.50E 01	1.50E 04	5
08 A 080*		VALERIC ACID	T	5.70E 05	2.50E 01	1.50E 04	5
18 A 101*		O-PHENYLPHENOL	T	5.70E 05	2.50E 01	1.50E 04	5
19 B 022*	P	CHLORINATED-M-CRESOLS	T	5.70E 05	2.50E 01	1.50E 04	5
23 C 102*		9-METHYLCARBAZOLE	T	5.70E 05	2.50E 01	1.50E 04	5
09 A 080*		BUTYRONITRILE	T	5.70E 05	2.50E 01	1.50E 04	5
19 B 023*		CHLORINATED-P-CRESOLS	T	5.70E 05	2.50E 01	1.50E 04	5
23 C 080*		CARBAZOLE	T	5.70E 05	2.50E 01	1.50E 04	5
18 A 162*		4-ETHYL-O-CRESOL	T	5.70E 05	2.50E 01	1.50E 04	5
18 A 163*		2-ETHYL-P-CRESOL	T	5.70E 05	2.40E 01	1.40E 04	5
18 A 160*		ETHYL CRESOLS	T	5.70E 05	2.40E 01	1.40E 04	5
18 A 161*		6-ETHYL-M-CRESOL	T	5.70E 05	2.40E 01	1.40E 04	5
19 A 020*	P	2-CHLOROPHENOL	T	5.70E 05	2.40E 01	1.40E 04	5
08 C 020*		FORMAMIDE	T	7.10E 05	2.40E 01	1.40E 04	6
21 C 060*		DIBENZ(A,C)ANTHRACENE	T	7.10E 05	2.40E 01	1.40E 04	6
02 A 320*	P	HEXACHLOROETHANE	T	2.30E 05	2.32E 01	1.40E 04	2
10 C 063*		2,5-XYLIDINE	T	2.30E 05	2.30E 01	1.40E 04	2
10 C 060*		DIMETHYLANILINES	T	5.70E 05	2.30E 01	1.34E 04	5
10 D 020*	W	N,N-DIMETHYLANILINE	T	5.70E 05	2.30E 01	1.34E 04	5
10 C 062*		2,4-XYLIDINE	T	5.70E 05	2.30E 01	1.34E 04	5
08 A 040*		ACETIC ACID	T	5.70E 05	2.30E 01	1.34E 04	5
10 A 080*		1,2-DIAMINOETHANE	T	5.70E 05	2.30E 01	1.34E 04	5
10 C 064*		2,6-XYLIDINE	T	5.70E 05	2.30E 01	1.34E 04	5
07 B 080*	P	ISOPHORONE	T	5.70E 05	2.30E 01	1.34E 04	5
10 C 061*		2,3-XYLIDINE	T	5.70E 05	2.30E 01	1.34E 04	5
10 C 065*		3,4-XYLIDINE	T	5.70E 05	2.30E 01	1.34E 04	5
10 C 066*		3,5-XYLIDINE	T	5.70E 05	2.30E 01	1.34E 04	5
08 A 060*		MALEIC ACID	T	7.10E 05	2.21E 01	1.30E 04	6
23 A 102*		3-CHLOROPYRIDINE	T	1.30E 05	2.20E 01	1.30E 04	4
23 A 100*	W	CHLOROPYRIDINES	T	1.30E 05	2.20E 01	1.30E 04	4
23 A 103*		4-CHLOROPYRIDINE	T	1.30E 05	2.20E 01	1.30E 04	4
23 A 101*		2-CHLOROPYRIDINE	T	1.30E 05	2.20E 01	1.30E 04	4

PRODUCT GAS ORGANIC MODULE COMPOSITE, HEALTH IMPACT

DMEG NO.		COMPOUND NAME	TYPE	CONC E-6 G/SCM	DS	WDS G/S	LCCAT
25 A 062*		2,4-DIMETHYLTHIOPHENE	T	5.70E 05	2.20E 01	1.30E 04	5
25 A 064*		3,4-DIMETHYLTHIOPHENE	T	5.70E 05	2.20E 01	1.30E 04	5
25 A 060*		DIMETHYLTHIOPHENES	T	5.70E 05	2.20E 01	1.30E 04	5
25 A 061*		2,3-DIMETHYLTHIOPHENE	T	5.70E 05	2.20E 01	1.30E 04	5
25 A 063*		2,5-DIMETHYLTHIOPHENE	T	5.70E 05	2.20E 01	1.30E 04	5
18 A 060*		2-METHOXYPHENOL	T	7.10E 05	2.20E 01	1.30E 04	6
23 C 180*		DIBENZO(A,G)CARBAZOLE	T	1.30E 05	2.20E 01	1.30E 04	4
04 A 200*		4-BROMOPHENYL PHENYL ETHER	T	5.70E 05	2.11E 01	1.24E 04	5
04 A 180*	P	CHLOROPHENYL PHENYL ETHER	T	5.70E 05	2.11E 01	1.24E 04	5
02 B 103*		CIS-1,3-DICHLOROPROPENE	T	2.30E 05	2.10E 01	1.23E 04	2
02 B 104*		TRANS-1,3-DICHLOROPROPENE	T	2.30E 05	2.10E 01	1.23E 04	2
02 B 100*	P	DICHLOROPROPENES	T	2.30E 05	2.10E 01	1.23E 04	2
18 A 120*		2,2'-DIHYDROXYDIPHENYL	T	7.10E 05	2.02E 01	1.20E 04	6
47 A 080	P	HYDROGEN CYANIDE	D	2.22E 05	2.01E 01	1.20E 04	
08 B 080*		Y-BUTYROLACTONE	T	7.10E 05	2.00E 01	1.20E 04	6
10 A 121*		2-AMINO-1-PROPANOL	T	7.10E 05	2.00E 01	1.20E 04	6
10 A 120*		PROPANOLAMINES	T	7.10E 05	2.00E 01	1.20E 04	6
10 A 122*		3-AMINO-1-PROPANOL	T	7.10E 05	2.00E 01	1.20E 04	6
10 A 123*		1-AMINO-2-PROPANOL	T	7.10E 05	2.00E 01	1.20E 04	6
18 B 080*		1,2,3-TRIHYDROXYBENZENE	T	7.10E 05	2.00E 01	1.20E 04	6
25 A 080*		TRIMETHYL AND TETRAMETHYL THIOPHENES	T	5.70E 05	2.00E 01	1.20E 04	5
25 A 081*		2,3,5-TRIMETHYLTHIOPHENE	T	5.70E 05	2.00E 01	1.20E 04	5
16 A 161*		1,2,4-TRICHLOROBENZENE	T	2.30E 05	1.91E 01	1.13E 04	2
16 A 160*	P	POLYCHLORINATED BENZENES	T	2.30E 05	1.91E 01	1.13E 04	2
16 A 162*		HEXACHLOROBENZENE	T	2.30E 05	1.91E 01	1.13E 04	2
04 B 080*		2,2'-DICHLORODIETHYL ETHER	T	5.70E 05	1.90E 01	1.12E 04	5
19 A 020*	P	2-CHLOROPHENOL	T	5.70E 05	1.90E 01	1.12E 04	5
08 C 020*		FORMAMIDE	T	5.70E 05	1.90E 01	1.12E 04	5
17 A 040*		NITROTOLUENES	T	5.70E 05	1.90E 01	1.12E 04	5
17 A 041*		2-NITROTOLUENE	T	5.70E 05	1.90E 01	1.12E 04	5
17 A 042*		3-NITROTOLUENE	T	5.70E 05	1.90E 01	1.12E 04	5
04 B 040*	P	1,1'-DICHLORODIETHYL ETHER	T	5.70E 05	1.90E 01	1.12E 04	5
17 A 043*		4-NITROTOLUENE	T	5.70E 05	1.90E 01	1.12E 04	5
42 A 080		CARBON DIOXIDE	D	1.71E 08	1.90E 01	1.12E 04	

PRODUCT GAS ORGANIC MODULE COMPOSITE, HEALTH IMPACT

DMEG NO.			COMPOUND NAME	TYPE	CONC E-6 G/SCM	DS	WDS G/S	LCCAT
12 A 080*			N-NITROSODIISOPROPYLAMINE	T	7.10E 05	1.90E 01	1.10E 04	6
14 A 041			9,10-ANTHRAQUINONE-1,5-DISULFONIC ACID	T	2.50E 06	1.80E 01	1.10E 04	7
08 A 160*			BENZOIC ACID	T	2.50E 06	1.80E 01	1.10E 04	7
26 B 040		W	TRITOTYL PHOSPHATES	T	2.50E 06	1.80E 01	1.10E 04	7
14 A 043			9,10-ANTHRAQUINONE-1,7-DISULFONIC ACID	T	2.50E 06	1.80E 01	1.10E 04	7
14 A 044			9,10-ANTHRAQUINONE-1,8-DISULFONIC ACID	T	2.50E 06	1.80E 01	1.10E 04	7
09 B 040*		W	NAPHTHONITRILES	T	5.70E 05	1.80E 01	1.10E 04	5
08 A 060*			MALEIC ACID	T	5.70E 05	1.80E 01	1.10E 04	5
09 B 042*			B-NAPHTHONITRILES	T	5.70E 05	1.80E 01	1.10E 04	5
09 B 020*		W	BENZONITRILE	T	5.70E 05	1.80E 01	1.10E 04	5
09 B 041*			A-NAPHTHONITRILES	T	5.70E 05	1.80E 01	1.10E 04	5
10 A 160*			CYCLOHEXYLAMINE	T	7.10E 05	1.80E 01	1.04E 04	6
08 B 041*			2-HYDROXYBENZOIC ACID	T	7.10E 05	1.80E 01	1.04E 04	6
18 A 060*			2-METHOXYPHENOL	T	5.70E 05	1.74E 01	1.03E 04	5
07 B 120*			ACETOPHENONE	T	7.10E 05	1.73E 01	1.02E 04	6
18 A 120*			2,2'-DIHYDROXYDIPHENYL	T	5.70E 05	1.62E 01	9.60E 03	5
08 B 080*			Y-BUTYROLACTONE	T	5.70E 05	1.60E 01	9.34E 03	5
10 A 123*			1-AMINO-2-PROPANOL	T	5.70E 05	1.60E 01	9.34E 03	5
10 A 122*			3-AMINO-1-PROPANOL	T	5.70E 05	1.60E 01	9.34E 03	5
18 B 080*			1,2,3-TRIHYDROXYBENZENE	T	5.70E 05	1.60E 01	9.34E 03	5
10 A 121*			2-AMINO-1-PROPANOL	T	5.70E 05	1.60E 01	9.34E 03	5
10 A 120*			PROPANOLAMINES	T	5.70E 05	1.60E 01	9.34E 03	5
05 C 040*		W	T-PENTANOL	T	7.10E 05	1.60E 01	9.30E 03	6
18 B 040*			1,3-DIHYDROXYBENZENE	T	7.10E 05	1.60E 01	9.30E 03	6
08 A 180*			ADIPIC ACID	T	2.50E 06	1.60E 01	9.21E 03	7
68 A 010	P		CHROMIUM	S	1.50E 01	1.50E 01	8.90E 03	
12 A 080*			N-NITROSODIISOPROPYLAMINE	T	5.70E 05	1.50E 01	8.90E 03	5
22 A 010*		W	INDENE	T	6.60E 05	1.50E 01	8.70E 03	3
21 C 040*			BENZO(G)CHRYSENE	T	2.30E 05	1.43E 01	8.50E 03	2
10 A 160*			CYCLOHEXYLAMINE	T	5.70E 05	1.42E 01	8.40E 03	5
08 B 041*			2-HYDROXYBENZOIC ACID	T	5.70E 05	1.42E 01	8.40E 03	5
07 B 120*			ACETOPHENONE	T	5.70E 05	1.40E 01	8.20E 03	5
21 A 020*	P		NAPHTHALENE	T	6.60E 05	1.32E 01	7.80E 03	5
23 B 061*			2,3-DIMETHYLQUINOLINE	T	7.10E 05	1.30E 01	7.61E 03	6

PRODUCT GAS ORGANIC MODULE COMPOSITE, HEALTH IMPACT

DMEG NO.		COMPOUND NAME	TYPE	CONC E-6 G/SCM	US	WDS G/S	LCCAT
23 B 060*		DIMETHYLQUINOLINES	T	7.10E 05	1.30E 01	7.61E 03	6
23 B 062*		2,6-DIMETHYLQUINOLINE	T	7.10E 05	1.30E 01	7.61E 03	6
23 B 065*		6,8-DIMETHYLQUINOLINE	T	7.10E 05	1.30E 01	7.61E 03	6
23 B 064*		3,4-DIMETHYLQUINOLINE	T	7.10E 05	1.30E 01	7.61E 03	6
23 B 067*		1,5-DIMETHYLISOQUINOLINE	T	7.10E 05	1.30E 01	7.61E 03	6
23 B 066*		1,3-DIMETHYLISOQUINOLINE	T	7.10E 05	1.30E 01	7.61E 03	6
23 B 040*		2-METHYLQUINOLINE	T	7.10E 05	1.30E 01	7.61E 03	6
23 B 063*		2,8-DIMETHYLQUINOLINE	T	7.10E 05	1.30E 01	7.61E 03	6
05 A 140*	W	BENZYL ALCOHOL	T	7.10E 05	1.30E 01	7.61E 03	6
23 C 060*		METHYLINDOLES	T	5.70E 05	1.30E 01	7.50E 03	5
05 C 040*	W	T-PENTANOL	T	5.70E 05	1.30E 01	7.50E 03	5
23 C 061*		2-METHYLINDOLE	T	5.70E 05	1.30E 01	7.50E 03	5
18 B 040*		1,3-DIHYDROXYBENZENE	T	5.70E 05	1.30E 01	7.50E 03	5
20 A 020*	P	2-NITROPHENOL	T	7.10E 05	1.22E 01	7.22E 03	6
18 A 182*		4,6-DI-TERT-BUTYL-M-CRESOL	T	7.10E 05	1.20E 01	7.10E 03	6
18 A 183*		2,6-DIMETHYL-4-HEPTYL PHENOL	T	7.10E 05	1.20E 01	7.10E 03	6
18 A 181*		2,4,6-TRIMETHYL METHYL PHENOL	T	7.10E 05	1.20E 01	7.10E 03	6
18 A 180*		POLYALKYLPHENOLS (MW>135)	T	7.10E 05	1.20E 01	7.10E 03	6
23 C 040*		INDOLE	T	1.30E 05	1.20E 01	7.00E 03	4
04 A 140*	P	2-CHLOROETHYL VINYL ETHER	T	1.30E 05	1.20E 01	7.00E 03	4
04 B 100*		2,2'-DICHLORODIISOPROPYL ETHER	T	1.30E 05	1.20E 01	7.00E 03	4
21 A 140*	P	ANTHRACENE	T	6.60E 05	1.20E 01	7.00E 03	3
08 D 160*		METHYL BENZOATE	T	7.10E 05	1.20E 01	6.90E 03	6
23 C 140*		DIBENZO(A,I)CARBAZOLE	T	1.30E 05	1.10E 01	6.40E 03	4
23 B 060*		DIMETHYLQUINOLINES	T	5.70E 05	1.03E 01	6.11E 03	5
05 A 140*	W	BENZYL ALCOHOL	T	5.70E 05	1.03E 01	6.11E 03	5
23 B 062*		2,6-DIMETHYLQUINOLINE	T	5.70E 05	1.03E 01	6.11E 03	5
23 B 040*		2-METHYLQUINOLINE	T	5.70E 05	1.03E 01	6.11E 03	5
23 B 064*		3,4-DIMETHYLQUINOLINE	T	5.70E 05	1.03E 01	6.11E 03	5
23 B 061*		2,3-DIMETHYLQUINOLINE	T	5.70E 05	1.03E 01	6.11E 03	5
23 B 065*		6,8-DIMETHYLQUINOLINE	T	5.70E 05	1.03E 01	6.11E 03	5
23 B 067*		1,5-DIMETHYLISOQUINOLINE	T	5.70E 05	1.03E 01	6.11E 03	5
23 B 063*		2,8-DIMETHYLQUINOLINE	T	5.70E 05	1.03E 01	6.11E 03	5
23 B 066*		1,3-DIMETHYLISOQUINOLINE	T	5.70E 05	1.03E 01	6.11E 03	5

PRODUCT GAS ORGANIC MODULE COMPOSITE, HEALTH IMPACT

DMEG NO.		COMPOUND NAME	TYPE	CONC E-6 G/SCM	DS	WDS G/S	LCCAT
23 A 064*		4-N-PROPYLPYRIDINE	T	7.10E 05	1.02E 01	6.10E 03	6
23 A 061*		2-ETHYLPYRIDINE	T	7.10E 05	1.02E 01	6.10E 03	6
23 A 080*		PHENYLPYRIDINES	T	7.10E 05	1.02E 01	6.10E 03	6
23 A 063*		4-ETHYLPYRIDINE	T	7.10E 05	1.02E 01	6.10E 03	6
23 A 082*		3-PHENYLPYRIDINE	T	7.10E 05	1.02E 01	6.10E 03	6
23 A 122*		2,4,6-COLLIDINE	T	7.10E 05	1.02E 01	6.10E 03	6
23 A 120*		COLLIDINES	T	7.10E 05	1.02E 01	6.10E 03	6
23 A 121*		5-ETHYL-2-METHYLPYRIDINE	T	7.10E 05	1.02E 01	6.10E 03	6
23 A 083*		4-PHENYLPYRIDINE	T	7.10E 05	1.02E 01	6.10E 03	6
23 A 062*		3-ETHYLPYRIDINE	T	7.10E 05	1.02E 01	6.10E 03	6
23 A 060*		MONOSUBSTITUTED ALKYL PYRIDINES	T	7.10E 05	1.02E 01	6.10E 03	6
23 A 081*		2-PHENYLPYRIDINE	T	7.10E 05	1.02E 01	6.10E 03	6
10 B 100*		MORPHOLINE	T	7.10E 05	1.02E 01	6.10E 03	6
08 D 200*		DIETHYL ADIPATE	T	7.10E 05	1.01E 01	6.00E 03	6
20 A 020*	P	2-NITROPHENOL	T	7.10E 05	9.90E 00	5.81E 03	6
18 A 183*		2,6-DIMETHYL-4-HEPTYL PHENOL	T	5.70E 05	9.82E 00	5.80E 03	5
18 A 181*		2,4,6-TRIMETHYL METHYL PHENOL	T	5.70E 05	9.70E 00	5.70E 03	5
18 A 180*		POLYALKYLPHENOLS (MW>135)	T	5.70E 05	9.70E 00	5.70E 03	5
07 A 140*		BENZALDEHYDE	T	5.70E 05	9.70E 00	5.70E 03	5
18 A 182*		4,6-DI-TERT-BUTYL-M-CRESOL	T	5.70E 05	9.70E 00	5.70E 03	5
07 B 182*		DIHYDRO-(D OR L)CARVONE	T	5.70E 05	9.70E 00	5.70E 03	5
07 B 181*		CARVONE(D OR L)	T	7.10E 05	9.60E 00	5.70E 03	6
07 B 180*		CARVONES	T	7.10E 05	9.60E 00	5.70E 03	6
16 A 200*	P	CHLORONAPHTHALENES	T	7.10E 05	9.60E 00	5.70E 03	6
16 A 202*		2-CHLORONAPHTHALENE	T	6.60E 05	9.60E 00	5.64E 03	5
16 A 201*		1-CHLORONAPHTHALENE	T	6.60E 05	9.60E 00	5.64E 03	5
08 D 160*		METHYL BENZOATE	T	6.60E 05	9.60E 00	5.64E 03	5
49 A 010	P	ARSENIC	T	5.70E 05	9.54E 00	5.51E 03	5
12 A 100*		N-NITROSODIPENTYLAMINE	D	> 1.80E 01>	9.00E 00>	5.31E 03	
05 A 160*		PHENETHYL ALCOHOL	T	7.10E 05	9.00E 00	5.30E 03	6
23 A 020*		PYRIDINE	T	7.10E 05	8.80E 00	5.20E 03	6
26 B 020		TRIPHENYL PHOSPHATE	T	1.30E 05	8.70E 00	5.11E 03	4
23 A 064*		4-N-PROPYLPYRIDINE	T	2.50E 06	8.62E 00	5.10E 03	7
23 A 120*		COLLIDINES	T	5.70E 05	8.30E 00	4.90E 03	5
			T	5.70E 05	8.30E 00	4.90E 03	5

PRODUCT GAS ORGANIC MODULE COMPOSITE, HEALTH IMPACT

DMEG NO.		COMPOUND NAME	TYPE	CONC E-6 G/SCM	DS	WDS G/S	LCCAT
23 A 061*		2-ETHYLPYRIDINE	T	5.70E 05	8.30E 00	4.90E 03	5
23 A 060*		MONOSUBSTITUTED ALKYL PYRIDINES	T	5.70E 05	8.30E 00	4.90E 03	5
23 A 080*		PHENYLPYRIDINES	T	5.70E 05	8.30E 00	4.90E 03	5
23 A 063*		4-ETHYLPYRIDINE	T	5.70E 05	8.30E 00	4.90E 03	5
23 A 122*		2,4,6-COLLIDINE	T	5.70E 05	8.30E 00	4.90E 03	5
23 A 082*		3-PHENYLPYRIDINE	T	5.70E 05	8.30E 00	4.90E 03	5
23 A 121*		5-ETHYL-2-METHYLPYRIDINE	T	5.70E 05	8.30E 00	4.90E 03	5
23 A 081*		2-PHENYLPYRIDINE	T	5.70E 05	8.30E 00	4.90E 03	5
23 A 062*		3-ETHYLPYRIDINE	T	5.70E 05	8.30E 00	4.90E 03	5
23 A 083*		4-PHENYLPYRIDINE	T	5.70E 05	8.30E 00	4.90E 03	5
10 B 100*		MORPHOLINE	T	5.70E 05	8.14E 00	4.80E 03	5
08 D 200*		DIETHYL ADIPATE	T	5.70E 05	7.91E 00	4.70E 03	5
23 B 160*		BENZO(H)QUINOLINE	T	7.10E 05	7.90E 00	4.70E 03	6
05 B 120*		BORNEOL	T	7.10E 05	7.90E 00	4.70E 03	6
23 B 080*		ACRIDINE	T	7.10E 05	7.90E 00	4.70E 03	6
23 B 140*		BENZO(F)QUINOLINE	T	7.10E 05	7.90E 00	4.70E 03	6
23 B 120*		PHENANTHRIDINE	T	7.10E 05	7.90E 00	4.70E 03	6
13 B 080*		METHYL DISULFIDE	T	7.10E 05	7.90E 00	4.70E 03	6
07 B 181*		CARVONE(D OR L)	T	5.70E 05	7.70E 00	4.54E 03	5
07 B 180*		CARVONES	T	5.70E 05	7.70E 00	4.54E 03	5
07 B 182*		DIHYDRO-(D OR L)CARVONE	T	5.70E 05	7.70E 00	4.54E 03	5
13 B 060*		DIPHENYL SULFIDE	T	7.10E 05	7.40E 00	4.40E 03	6
22 B 040*	P W	FLUORANTHENE	T	6.60E 05	7.35E 00	4.32E 03	5
23 A 146*		2,3,4,6-TETRAMETHYL PYRIDINE	T	1.30E 05	7.22E 00	4.30E 03	4
23 A 145*		3,4-DIMETHYLPYRIDINE	T	1.30E 05	7.22E 00	4.30E 03	4
23 A 140*		DISUBSTITUTED POLYSUBSTITUTED ALKYL PYRIDINES	T	1.30E 05	7.22E 00	4.30E 03	4
23 A 144*		2,6-DIMETHYLPYRIDINE	T	1.30E 05	7.22E 00	4.30E 03	4
23 A 142*		2,4-DIMETHYLPYRIDINE	T	1.30E 05	7.22E 00	4.30E 03	4
23 A 143*		2,5-DIMETHYLPYRIDINE	T	1.30E 05	7.22E 00	4.30E 03	4
23 A 141*		2,3-DIMETHYLPYRIDINE	T	1.30E 05	7.22E 00	4.30E 03	4
12 A 100*		N-NITROSODIPENTYLAMINE	T	5.70E 05	7.21E 00	4.30E 03	5
16 A 220*	W	POLYCHLORINATED BIPHENYLS	D	< 7.20E 00<	7.20E 00<	4.24E 03	2
05 A 160*		PHENETHYL ALCOHOL	T	5.70E 05	7.03E 00	4.20E 03	5
23 C 120*		BENZO(A)CARBAZOLE	T	1.30E 05	6.84E 00	4.03E 03	4

PRODUCT GAS ORGANIC MODULE COMPOSITE, HEALTH IMPACT

DMEG NO.		COMPOUND NAME	TYPE	CONC E-6 G/SCM	DS	WDS G/S	LCCAT
15 A 143*		TERT-BUTYL BENZENE	T	6.60E 05	6.60E 00	3.90E 03	3
15 A 141*		N-BUTYL BENZENE	T	6.60E 05	6.60E 00	3.90E 03	3
15 A 140*		BUTYL BENZENES	T	6.60E 05	6.60E 00	3.90E 03	3
15 A 142*		SEC-BUTYL BENZENE	T	6.60E 05	6.60E 00	3.90E 03	3
18 C 040*	W	2-NAPHTHOL	T	7.10E 05	6.50E 00	3.80E 03	6
13 B 080*		METHYL DISULFIDE	T	5.70E 05	6.33E 00	3.73E 03	5
23 B 140*		BENZO(F)QUINOLINE	T	5.70E 05	6.33E 00	3.73E 03	5
23 B 120*		PHENANTHRIDINE	T	5.70E 05	6.33E 00	3.73E 03	5
23 B 080*		ACRIDINE	T	5.70E 05	6.33E 00	3.73E 03	5
23 B 160*		BENZO(H)QUINOLINE	T	5.70E 05	6.33E 00	3.73E 03	5
05 B 120*		BORNEOL	T	5.70E 05	6.33E 00	3.73E 03	5
13 B 060*		DIPHENYL SULFIDE	T	5.70E 05	5.93E 00	3.50E 03	5
18 C 020*		1-NAPHTHOL	T	7.10E 05	5.91E 00	3.50E 03	6
09 A 100*		1,3-DICYANO-1-HYDROXYBUTANE	T	1.30E 05	5.90E 00	3.50E 03	4
23 C 080*		CARBAZOLE	T	1.30E 05	5.70E 00	3.33E 03	4
23 C 102*		9-METHYLCARBAZOLE	T	1.30E 05	5.70E 00	3.33E 03	4
23 C 101*		3-METHYLCARBAZOLE	T	1.30E 05	5.70E 00	3.33E 03	4
25 A 041*		2-METHYLTHIOPHENE	T	1.30E 05	5.70E 00	3.33E 03	4
23 C 100*		METHYLCARBAZOLES	T	1.30E 05	5.70E 00	3.33E 03	4
25 A 040*		METHYLTHIOPHENES	T	1.30E 05	5.70E 00	3.33E 03	4
09 A 080*		BUTYRONITRILE	T	1.30E 05	5.70E 00	3.33E 03	4
25 B 040*	W	BENZO(B)THIOPHENE	T	1.30E 05	5.70E 00	3.33E 03	4
25 A 042*		3-METHYLTHIOPHENE	T	1.30E 05	5.70E 00	3.33E 03	4
15 B 182*		1,2,4-TRIMETHYLBENZENE	T	6.60E 05	5.50E 00	3.24E 03	3
15 B 200*		TETRAMETHYLBENZENES	T	6.60E 05	5.50E 00	3.24E 03	3
15 B 181*		1,2,3-TRIMETHYLBENZENE	T	6.60E 05	5.50E 00	3.24E 03	3
15 B 180*		TRIMETHYLBENZENES	T	6.60E 05	5.50E 00	3.24E 03	3
15 B 183*		1,3,5-TRIMETHYLBENZENE	T	6.60E 05	5.50E 00	3.24E 03	3
15 B 202*		1,2,3,5-TETRAMETHYLBENZENE	T	6.60E 05	5.50E 00	3.24E 03	3
15 B 201*		1,2,3,4-TETRAMETHYLBENZENE	T	6.60E 05	5.50E 00	3.24E 03	3
15 B 203*		1,2,4,5-TETRAMETHYLBENZENE	T	6.60E 05	5.50E 00	3.24E 03	3
18 C 040*	W	2-NAPHTHOL	T	5.70E 05	5.20E 00	3.10E 03	5
02 A 140*	P	DIBROMOCHLOROMETHANE	T	2.30E 05	5.11E 00	3.01E 03	2
22 A 010*	W	INDENE	T	2.30E 05	5.11E 00	3.01E 03	2

PRODUCT GAS ORGANIC MODULE COMPOSITE, HEALTH IMPACT

DMEG NO.		COMPOUND NAME	TYPE	CONC E-6 G/SCM	DS	WDS G/S	LCCAT
15 B 142*		1,4-DIHYDRONAPHTHALENE	T	6.60E 05	5.10E 00	3.00E 03	3
15 B 141*		1,2-DIHYDRONAPHTHALENE	T	6.60E 05	5.10E 00	3.00E 03	3
15 B 140*		DIHYDRONAPHTHALENES	T	6.60E 05	5.10E 00	3.00E 03	3
15 B 120*		TETRAHYDRONAPHTHALENE	T	6.60E 05	5.10E 00	3.00E 03	3
08 A 160*		BENZOIC ACID	T	7.10E 05	5.10E 00	3.00E 03	6
08 D 320*	P	BUTYL BENZYL PHTHALATE	T	7.10E 05	5.10E 00	3.00E 03	6
25 A 062*		2,4-DIMETHYLTHIOPHENE	T	1.30E 05	5.00E 00	3.00E 03	4
25 A 064*		3,4-DIMETHYLTHIOPHENE	T	1.30E 05	5.00E 00	3.00E 03	4
15 A 160*	W	BIPHENYL	D	5.00E 03	5.00E 00	3.00E 03	3
25 A 063*		2,5-DIMETHYLTHIOPHENE	T	1.30E 05	5.00E 00	3.00E 03	4
25 A 061*		2,3-DIMETHYLTHIOPHENE	T	1.30E 05	5.00E 00	3.00E 03	4
25 A 060*		DIMETHYLTHIOPHENES	T	1.30E 05	5.00E 00	3.00E 03	4
20 B 040*	W	DINITRO-P-CRESOLS	D	9.80E 02	4.90E 00	2.90E 03	5
04 A 180*	P	CHLOROPHENYL PHENYL ETHER	T	1.30E 05	4.81E 00	2.84E 03	4
04 A 200*		4-BROMOPHENYL PHENYL ETHER	T	1.30E 05	4.81E 00	2.84E 03	4
18 C 020*		1-NAPHTHOL	T	5.70E 05	4.80E 00	2.80E 03	5
18 C 083*		5-INDANOL	T	7.10E 05	4.73E 00	2.80E 03	6
18 C 082*		4-INDANOL	T	7.10E 05	4.73E 00	2.80E 03	6
05 A 100*		ISOBUTYL ALCOHOL	T	7.10E 05	4.73E 00	2.80E 03	6
18 C 080*		INDANOLS	T	7.10E 05	4.73E 00	2.80E 03	6
05 A 080*		N-BUTANOL	T	7.10E 05	4.73E 00	2.80E 03	6
18 C 081*		1-INDANOL	T	7.10E 05	4.73E 00	2.80E 03	6
21 A 020*	P	NAPHTHALENE	T	2.30E 05	4.60E 00	2.71E 03	2
01 A 200	W	OCTANES	T	1.60E 06	4.60E 00	2.70E 03	1
01 A 201		N-OCTANE	T	1.60E 06	4.60E 00	2.70E 03	1
02 A 343*		1,3-DICHLOROPROPANE	T	1.60E 06	4.60E 00	2.70E 03	1
02 A 340*	P	DICHLOROPROPANES	T	1.60E 06	4.60E 00	2.70E 03	1
25 A 080*		TRIMETHYL AND TETRAMETHYL THIOPHENES	T	1.30E 05	4.50E 00	2.64E 03	4
25 A 081*		2,3,5-TRIMETHYLTHIOPHENE	T	1.30E 05	4.50E 00	2.64E 03	4
05 B 080*		2,6-DIMETHYL-4-HEPTANOL	T	7.10E 05	4.43E 00	2.61E 03	6
08 A 180*		ADIPIC ACID	T	7.10E 05	4.43E 00	2.61E 03	6
03 B 060*		2-ETHYL-4-METHYL-1,3-DIOXOLANE	T	5.70E 05	4.40E 00	2.60E 03	5
04 B 080*		2,2'-DICHLORODIETHYL ETHER	T	1.30E 05	4.33E 00	2.60E 03	4
15 A 020	P	BENZENE	D	> 1.30E 04>	4.33E 00>	2.60E 03	

PRODUCT GAS ORGANIC MODULE COMPOSITE, HEALTH IMPACT

OMEG NO.			COMPOUND NAME	TYPE	CONC E-6 G/SCM	DS	WDS G/S	LCCAT
17 A 040*			NITROTOLUENES	T	1.30E 05	4.33E 00	2.60E 03	4
17 A 041*			2-NITROTOLUENE	T	1.30E 05	4.33E 00	2.60E 03	4
17 A 042*			3-NITROTOLUENE	T	1.30E 05	4.33E 00	2.60E 03	4
17 A 043*			4-NITROTOLUENE	T	1.30E 05	4.33E 00	2.60E 03	4
04 B 040*	P		1,1'-DICHLORODIETHYL ETHER	T	1.30E 05	4.33E 00	2.60E 03	4
02 A 360*			BROMOBUTANES	T	2.30E 05	4.10E 00	2.42E 03	2
21 A 140*	P		ANTHRACENE	T	2.30E 05	4.10E 00	2.42E 03	2
02 A 361*			1-BROMOBUTANE	T	2.30E 05	4.10E 00	2.42E 03	2
08 A 160*			BENZOIC ACID	T	5.70E 05	4.10E 00	2.40E 03	5
08 D 320*	P		BUTYL BENZYL PHTHALATE	T	5.70E 05	4.10E 00	2.40E 03	5
09 B 040*		W	NAPHTHONITRILES	T	1.30E 05	4.10E 00	2.40E 03	4
09 B 042*			B-NAPHTHONITRILES	T	1.30E 05	4.10E 00	2.40E 03	4
09 B 020*		W	BENZONITRILE	T	1.30E 05	4.10E 00	2.40E 03	4
09 B 041*			A-NAPHTHONITRILES	T	1.30E 05	4.10E 00	2.40E 03	4
05 A 080*			N-BUTANOL	T	5.70E 05	3.80E 00	2.24E 03	5
18 C 081*			1-INDANOL	T	5.70E 05	3.80E 00	2.24E 03	5
18 C 083*			5-INDANOL	T	5.70E 05	3.80E 00	2.24E 03	5
06 B 020*		W	2,3-EPOXY-1-PROPANOL	T	5.70E 05	3.80E 00	2.24E 03	5
05 A 100*			ISOBUTYL ALCOHOL	T	5.70E 05	3.80E 00	2.24E 03	5
18 C 082*			4-INDANOL	T	5.70E 05	3.80E 00	2.24E 03	5
18 C 080*			INDANOLS	T	5.70E 05	3.80E 00	2.24E 03	5
05 C 060*			A-TERPINEOL	T	7.10E 05	3.75E 00	2.20E 03	6
05 B 080*			2,6-DIMETHYL-4-HEPTANOL	T	5.70E 05	3.60E 00	2.10E 03	5
08 A 180*			ADIPIC ACID	T	5.70E 05	3.60E 00	2.10E 03	5
03 A 040*		W	3-METHOXYBIPHENYL	T	5.70E 05	3.60E 00	2.10E 03	5
16 A 201*			1-CHLORONAPHTHALENE	T	2.30E 05	3.33E 00	2.00E 03	2
16 A 202*			2-CHLORONAPHTHALENE	T	2.30E 05	3.33E 00	2.00E 03	2
16 A 200*	P		CHLORONAPHTHALENES	T	2.30E 05	3.33E 00	2.00E 03	2
53 A 060			SULFUR DIOXIDE	D	4.20E 04	3.21E 00	1.90E 03	
21 B 040*	P		BENZ(A)ANTHRACENE	D	1.40E 02	3.11E 00	1.85E 03	3
79 A 010	P		SILVER	S	3.00E 01	3.00E 00	1.80E 03	
05 C 060*			A-TERPINEOL	T	5.70E 05	3.00E 00	1.80E 03	5
23 C 061*			2-METHYLINDOLE	T	1.30E 05	2.90E 00	1.70E 03	4
23 C 060*			METHYLINDOLES	T	1.30E 05	2.90E 00	1.70E 03	4

PRODUCT GAS ORGANIC MODULE COMPOSITE, HEALTH IMPACT

DMEG NO.		COMPOUND NAME	TYPE	CONC E-6 G/SCM	DS	WDS G/S	LCCAT
21 A 044*		2-ETHYLNAPHTHALENE	T	6.60E 05	2.90E 00	1.70E 03	3
21 A 040*		MUNOALKYL NAPHTHALENES	T	6.60E 05	2.90E 00	1.70E 03	3
21 A 080*		DIMETHYLNAPHTHALENES	T	6.60E 05	2.90E 00	1.70E 03	3
21 B 180*	P	PYRENE	T	6.60E 05	2.90E 00	1.70E 03	3
21 A 081*		1,4-DIMETHYLNAPHTHALENE	T	6.60E 05	2.90E 00	1.70E 03	3
21 A 041*		1-METHYLNAPHTHALENE	T	6.60E 05	2.90E 00	1.70E 03	3
21 A 082*		2,3-DIMETHYLNAPHTHALENE	T	6.60E 05	2.90E 00	1.70E 03	3
21 A 083*		2,6-DIMETHYLNAPHTHALENE	T	6.60E 05	2.90E 00	1.70E 03	3
15 B 020*		INDAN	T	6.60E 05	2.90E 00	1.70E 03	3
21 A 042*		2-METHYLNAPHTHALENE	T	6.60E 05	2.90E 00	1.70E 03	3
21 A 043*		1-ETHYLNAPHTHALENE	T	6.60E 05	2.90E 00	1.70E 03	3
08 D 240*		DI-2-ETHYLBUTYL ADIPATE	T	7.10E 05	2.83E 00	1.70E 03	6
17 B 020*		METHOXYNITROBENZENES	T	5.70E 05	2.71E 00	1.60E 03	5
17 B 021*		1-METHOXY-2-NITROBENZENE	T	5.70E 05	2.71E 00	1.60E 03	5
17 B 022*		1-METHOXY-3-NITROBENZENE	T	5.70E 05	2.71E 00	1.60E 03	5
17 B 023*		1-METHOXY-4-NITROBENZENE	T	5.70E 05	2.71E 00	1.60E 03	5
15 A 100*		PROPYL BENZENE	T	6.60E 05	2.63E 00	1.60E 03	3
15 A 120*		ISOPROPYL BENZENE	T	6.60E 05	2.63E 00	1.60E 03	3
16 A 180*		2-CHLOROTOLUENE	T	6.60E 05	2.63E 00	1.60E 03	3
22 B 040*	P W	FLUORANTHENE	T	2.30E 05	2.60E 00	1.50E 03	2
02 B 080*	P	TETRACHLOROETHENE	T	1.60E 06	2.40E 00	1.40E 03	1
15 A 142*		SEC-BUTYL BENZENE	T	2.30E 05	2.30E 00	1.40E 03	2
15 A 143*		TERT-BUTYL BENZENE	T	2.30E 05	2.30E 00	1.40E 03	2
15 A 140*		BUTYL BENZENES	T	2.30E 05	2.30E 00	1.40E 03	2
15 A 141*		N-BUTYL BENZENE	T	2.30E 05	2.30E 00	1.40E 03	2
08 D 240*		DI-2-ETHYLBUTYL ADIPATE	T	5.70E 05	2.30E 00	1.34E 03	5
07 A 140*		BENZALDEHYDE	T	1.30E 05	2.20E 00	1.30E 03	4
16 A 120*	P	1,3-DICHLOROBENZENE	T	6.60E 05	2.20E 00	1.30E 03	3
16 A 100*	P	1,2-DICHLOROBENZENE	T	6.60E 05	2.20E 00	1.30E 03	3
01 A 140		HEXANES	D	6.92E 05	2.00E 00	1.20E 03	
05 B 062*		3-PENTANOL	T	7.10E 05	2.00E 00	1.20E 03	6
05 A 122*		2-METHYL-1-BUTANOL	T	7.10E 05	2.00E 00	1.20E 03	6
05 B 061*		2-PENTANOL	T	7.10E 05	2.00E 00	1.20E 03	6
05 A 121*		N-PENTANOL	T	7.10E 05	2.00E 00	1.20E 03	6

PRODUCT GAS ORGANIC MODULE COMPOSITE, HEALTH IMPACT

OMEG NO.		COMPOUND NAME	TYPE	CONC E-6 G/SCM	OS	WDS G/S	LCCAT
23 A 043*		4-METHYLPYRIDINE	T	7.10E 05	2.00E 00	1.20E 03	6
05 A 120*		PENTANOLS (PRIMARY)	T	7.10E 05	2.00E 00	1.20E 03	6
05 A 123*		2,2-DIMETHYL-1-PROPANOL	T	7.10E 05	2.00E 00	1.20E 03	6
05 B 060*		PENTANOLS (SECONDARY)	T	7.10E 05	2.00E 00	1.20E 03	6
05 A 124*		3-METHYL-1-BUTANOL	T	7.10E 05	2.00E 00	1.20E 03	6
23 A 042*		3-METHYLPYRIDINE	T	7.10E 05	2.00E 00	1.20E 03	6
23 A 041*		2-METHYLPYRIDINE	T	7.10E 05	2.00E 00	1.20E 03	6
05 B 063*		3-METHYL-2-BUTANOL	T	7.10E 05	2.00E 00	1.20E 03	6
15 B 180*		TRIMETHYLBENZENES	T	2.30E 05	1.91E 00	1.13E 03	2
15 B 182*		1,2,4-TRIMETHYLBENZENE	T	2.30E 05	1.91E 00	1.13E 03	2
15 B 203*		1,2,4,5-TETRAMETHYLBENZENE	T	2.30E 05	1.91E 00	1.13E 03	2
15 B 183*		1,3,5-TRIMETHYLBENZENE	T	2.30E 05	1.91E 00	1.13E 03	2
15 B 202*		1,2,3,5-TETRAMETHYLBENZENE	T	2.30E 05	1.91E 00	1.13E 03	2
15 B 200*		TETRAMETHYLBENZENES	T	2.30E 05	1.91E 00	1.13E 03	2
15 B 201*		1,2,3,4-TETRAMETHYLBENZENE	T	2.30E 05	1.91E 00	1.13E 03	2
15 B 181*		1,2,3-TRIMETHYLBENZENE	T	2.30E 05	1.91E 00	1.13E 03	2
01 A 020		METHANE	D	6.30E 06	1.90E 00	1.12E 03	
16 A 020*	P	CHLOROBENZENE	T	6.60E 05	1.90E 00	1.11E 03	3
23 A 062*		3-ETHYLPYRIDINE	T	1.30E 05	1.90E 00	1.11E 03	4
23 A 122*		2,4,6-COLLIDINE	T	1.30E 05	1.90E 00	1.11E 03	4
23 A 082*		3-PHENYLPYRIDINE	T	1.30E 05	1.90E 00	1.11E 03	4
23 A 081*		2-PHENYLPYRIDINE	T	1.30E 05	1.90E 00	1.11E 03	4
23 A 121*		5-ETHYL-2-METHYLPYRIDINE	T	1.30E 05	1.90E 00	1.11E 03	4
23 A 063*		4-ETHYLPYRIDINE	T	1.30E 05	1.90E 00	1.11E 03	4
23 A 064*		4-N-PROPYLPYRIDINE	T	1.30E 05	1.90E 00	1.11E 03	4
23 A 083*		4-PHENYLPYRIDINE	T	1.30E 05	1.90E 00	1.11E 03	4
23 A 061*		2-ETHYLPYRIDINE	T	1.30E 05	1.90E 00	1.11E 03	4
23 A 080*		PHENYLPYRIDINES	T	1.30E 05	1.90E 00	1.11E 03	4
23 A 120*		COLLIDINES	T	1.30E 05	1.90E 00	1.11E 03	4
23 A 060*		MONOSUBSTITUTED ALKYL PYRIDINES	T	1.30E 05	1.90E 00	1.11E 03	4
15 B 120*		TETRAHYDRONAPHTHALENE	T	2.30E 05	1.80E 00	1.04E 03	2
15 B 140*		DIHYDRONAPHTHALENES	T	2.30E 05	1.80E 00	1.04E 03	2
15 B 141*		1,2-DIHYDRONAPHTHALENE	T	2.30E 05	1.80E 00	1.04E 03	2
15 B 142*		1,4-DIHYDRONAPHTHALENE	T	2.30E 05	1.80E 00	1.04E 03	2

PRODUCT GAS ORGANIC MODULE COMPOSITE, HEALTH IMPACT

DMEG NO.	COMPOUND NAME	TYPE	CONC E-6 G/SCM	DS	MDS G/S	LCCAT
08 D 260*	DI-2-ETHYLHEXYL ADIPATE	T	7.10E 05	1.73E 00	1.02E 03	6
01 A 100	PENTANES	D	5.94E 05	1.70E 00	1.00E 03	
16 A 083*	1-BROMO-4-CHLOROBENZENE	T	6.60E 05	1.70E 00	1.00E 03	3
16 A 082*	1-BROMO-3-CHLOROBENZENE	T	6.60E 05	1.70E 00	1.00E 03	3
16 A 081*	1-BROMO-2-CHLOROBENZENE	T	6.60E 05	1.70E 00	1.00E 03	3
16 A 080*	BROMOCHLOROBENZENES	T	6.60E 05	1.70E 00	1.00E 03	3
01 A 242	N-UNDECANE	T	1.60E 06	1.60E 00	9.43E 02	1
01 A 241	N-DECANE	T	1.60E 06	1.60E 00	9.43E 02	1
01 A 222	ISONONANE	T	1.60E 06	1.60E 00	9.43E 02	1
01 A 220	NONANES	T	1.60E 06	1.60E 00	9.43E 02	1
01 A 221	N-NONANE	T	1.60E 06	1.60E 00	9.43E 02	1
01 A 260	N-DODECANE	T	1.60E 06	1.60E 00	9.43E 02	1
01 A 240	ALKANES(C=10,11)	T	1.60E 06	1.60E 00	9.43E 02	1
05 A 123*	2,2-DIMETHYL-1-PROPANOL	T	5.70E 05	1.60E 00	9.34E 02	5
05 A 120*	PENTANOLS (PRIMARY)	T	5.70E 05	1.60E 00	9.34E 02	5
23 A 041*	2-METHYLPYRIDINE	T	5.70E 05	1.60E 00	9.34E 02	5
05 B 062*	3-PENTANOL	T	5.70E 05	1.60E 00	9.34E 02	5
23 A 042*	3-METHYLPYRIDINE	T	5.70E 05	1.60E 00	9.34E 02	5
05 A 122*	2-METHYL-1-BUTANOL	T	5.70E 05	1.60E 00	9.34E 02	5
05 B 063*	3-METHYL-2-BUTANOL	T	5.70E 05	1.60E 00	9.34E 02	5
05 A 124*	3-METHYL-1-BUTANOL	T	5.70E 05	1.60E 00	9.34E 02	5
05 B 061*	2-PENTANOL	T	5.70E 05	1.60E 00	9.34E 02	5
05 B 060*	PENTANOLS (SECONDARY)	T	5.70E 05	1.60E 00	9.34E 02	5
05 A 121*	N-PENTANOL	T	5.70E 05	1.60E 00	9.34E 02	5
23 A 043*	4-METHYLPYRIDINE	T	5.70E 05	1.60E 00	9.34E 02	5
15 A 080*	STYRENE	T	6.60E 05	1.60E 00	9.30E 02	3
15 B 082*	M-XYLENE	T	6.60E 05	1.50E 00	8.90E 02	3
15 B 102*	M-DIETHYL BENZENE	T	6.60E 05	1.50E 00	8.90E 02	3
15 B 104*	O-DIISOPROPYL BENZENE	T	6.60E 05	1.50E 00	8.90E 02	3
15 B 101*	O-DIETHYL BENZENE	T	6.60E 05	1.50E 00	8.90E 02	3
15 B 100*	DIALKYL BENZENES (MW:134-191)	T	6.60E 05	1.50E 00	8.90E 02	3
15 B 103*	P-DIETHYL BENZENE	T	6.60E 05	1.50E 00	8.90E 02	3
15 B 106*	1,4-DI-TERT-BUTYL BENZENE	T	6.60E 05	1.50E 00	8.90E 02	3
15 B 105*	M-DIISOPROPYL BENZENE	T	6.60E 05	1.50E 00	8.90E 02	3

PRODUCT GAS ORGANIC MODULE COMPOSITE, HEALTH IMPACT

OMEG NO.		COMPOUND NAME	TYPE	CONC E-6 G/SCM	DS	WDS G/S	LOCAT
15 B 083*		P-XYLENE	T	6.60E 05	1.50E 00	8.90E 02	3
16 A 140*	P	1,4-DICHLOROBENZENE	T	6.60E 05	1.50E 00	8.70E 02	3
08 D 260*		DI-2-ETHYLHEXYL ADIPATE	T	5.70E 05	1.40E 00	8.20E 02	5
16 A 063*		1,4-DIBROMOBENZENE	T	6.60E 05	1.40E 00	8.11E 02	3
16 A 061*		1,2-DIBROMOBENZENE	T	6.60E 05	1.40E 00	8.11E 02	3
16 A 062*		1,3-DIBROMOBENZENE	T	6.60E 05	1.40E 00	8.11E 02	3
16 A 060*		DIBROMOBENZENES	T	6.60E 05	1.40E 00	8.11E 02	3
08 D 142*		SEC-AMYL ACETATE	T	7.10E 05	1.40E 00	8.10E 02	6
08 D 141*		N-AMYL ACETATE	T	7.10E 05	1.40E 00	8.10E 02	6
08 D 143*		ISOAMYL ACETATE	T	7.10E 05	1.40E 00	8.10E 02	6
08 D 140*		AMYL ACETATES	T	6.60E 05	1.34E 00	7.94E 02	3
16 A 040*		BROMOBENZENE	T	5.70E 05	1.30E 00	7.50E 02	5
23 C 062*		3-METHYLINDOLE	T	7.10E 05	1.22E 00	7.22E 02	6
08 D 220*		DIBUTYL ADIPATE	T	5.70E 05	1.10E 00	6.50E 02	5
08 D 141*		N-AMYL ACETATE	T	5.70E 05	1.10E 00	6.50E 02	5
08 D 142*		SEC-AMYL ACETATE	T	5.70E 05	1.10E 00	6.50E 02	5
08 D 140*		AMYL ACETATES	T	5.70E 05	1.10E 00	6.50E 02	5
08 D 143*		ISOAMYL ACETATE	T	7.10E 05	1.01E 00	6.00E 02	6
08 D 122*		SEC-BUTYL ACETATE	T	7.10E 05	1.01E 00	6.00E 02	6
08 D 120*		BUTYL ACETATES	T	7.10E 05	1.01E 00	6.00E 02	6
08 D 123*		ISOBUTYL ACETATE	T	7.10E 05	1.01E 00	6.00E 02	6
08 D 121*		N-BUTYL ACETATE	T	2.30E 05	1.00E 00	5.90E 02	2
03 B 060*		2-ETHYL-4-METHYL-1,3-DIOXOLANE	T	2.30E 05	1.00E 00	5.90E 02	2
21 A 042*		2-METHYLNAPHTHALENE	T	2.30E 05	1.00E 00	5.90E 02	2
21 A 082*		2,3-DIMETHYLNAPHTHALENE	T	2.30E 05	1.00E 00	5.90E 02	2
21 A 041*		1-METHYLNAPHTHALENE	T	2.30E 05	1.00E 00	5.90E 02	2
21 A 081*		1,4-DIMETHYLNAPHTHALENE	T	2.30E 05	1.00E 00	5.90E 02	2
21 A 044*		2-ETHYLNAPHTHALENE	T	2.30E 05	1.00E 00	5.90E 02	2
21 A 040*		MONOALKYL NAPHTHALENES	T	2.30E 05	1.00E 00	5.90E 02	2
21 A 080*		DIMETHYLNAPHTHALENES	T	2.30E 05	1.00E 00	5.90E 02	2
15 B 020*		INDAN	T	2.30E 05	1.00E 00	5.90E 02	2
21 B 180*	P	PYRENE	T	2.30E 05	1.00E 00	5.90E 02	2
21 A 083*		2,6-DIMETHYLNAPHTHALENE	T	2.30E 05	1.00E 00	5.90E 02	2
21 A 043*		1-ETHYLNAPHTHALENE	T	2.30E 05	1.00E 00	5.90E 02	2

PRODUCT GAS ORGANIC MODULE COMPOSITE, HEALTH IMPACT

DMEG NO.			COMPOUND NAME	TYPE	CONC E-6 G/SCM	DS	WDS G/S	LCCAT
08 D 220*			DIBUTYL ADIPATE	T	5.70E 05	9.82E-01	5.80E 02	5
48 A 010			PHOSPHORUS	S	9.40E 01	9.40E-01	5.54E 02	
16 A 180*			2-CHLOROTOLUENE	T	2.30E 05	9.20E-01	5.42E 02	2
15 A 120*			ISOPROPYL BENZENE	T	2.30E 05	9.20E-01	5.42E 02	2
15 A 100*			PROPYL BENZENE	T	2.30E 05	9.20E-01	5.42E 02	2
06 B 020*		W	2,3-EPOXY-1-PROPANOL	T	1.30E 05	8.70E-01	5.11E 02	4
08 D 100*			PROPYL ACETATES	T	7.10E 05	8.50E-01	5.00E 02	6
08 D 101*			N-PROPYL ACETATE	T	7.10E 05	8.50E-01	5.00E 02	6
08 D 123*			ISOBUTYL ACETATE	T	5.70E 05	8.14E-01	4.80E 02	5
08 D 122*			SEC-BUTYL ACETATE	T	5.70E 05	8.14E-01	4.80E 02	5
08 D 120*			BUTYL ACETATES	T	5.70E 05	8.14E-01	4.80E 02	5
08 D 121*			N-BUTYL ACETATE	T	5.70E 05	8.14E-01	4.80E 02	5
03 A 040*		W	3-METHOXYBIPHENYL	T	1.30E 05	8.12E-01	4.80E 02	4
53 A 080			CARBONYL SULFIDE	D	3.51E 05	8.00E-01	4.70E 02	
16 A 100*	P		1,2-DICHLOROBENZENE	T	2.30E 05	7.70E-01	4.52E 02	2
16 A 120*	P		1,3-DICHLOROBENZENE	T	2.30E 05	7.70E-01	4.52E 02	2
06 A 040*			PROPYLENE GLYCOL	T	7.10E 05	7.50E-01	4.40E 02	6
01 B 080			BUTADIENES	T	1.60E 06	7.30E-01	4.30E 02	1
08 D 101*			N-PROPYL ACETATE	T	5.70E 05	6.80E-01	4.00E 02	5
08 D 100*			PROPYL ACETATES	T	5.70E 05	6.80E-01	4.00E 02	5
02 A 340*	P		DICHLOROPROPANES	T	2.30E 05	6.60E-01	3.90E 02	2
16 A 020*	P		CHLOROBENZENE	T	2.30E 05	6.60E-01	3.90E 02	2
02 A 343*			1,3-DICHLOROPROPANE	T	2.30E 05	6.60E-01	3.90E 02	2
76 A 010	P		NICKEL	S	9.60E 00	6.40E-01	3.80E 02	
53 A 100			CARBON DISULFIDE	D	3.73E 04	6.21E-01	3.70E 02	
17 B 023*			1-METHOXY-4-NITROBENZENE	T	1.30E 05	6.20E-01	3.70E 02	4
17 B 020*			METHOXYNITROBENZENES	T	1.30E 05	6.20E-01	3.70E 02	4
17 B 021*			1-METHOXY-2-NITROBENZENE	T	1.30E 05	6.20E-01	3.70E 02	4
17 B 022*			1-METHOXY-3-NITROBENZENE	T	1.30E 05	6.20E-01	3.70E 02	4
06 A 040*			PROPYLENE GLYCOL	T	5.70E 05	6.00E-01	3.53E 02	5
16 A 083*			1-BROMO-4-CHLOROBENZENE	T	2.30E 05	5.90E-01	3.50E 02	2
16 A 080*			BROMOCHLOROBENZENES	T	2.30E 05	5.90E-01	3.50E 02	2
16 A 081*			1-BROMO-2-CHLOROBENZENE	T	2.30E 05	5.90E-01	3.50E 02	2
16 A 082*			1-BROMO-3-CHLOROBENZENE	T	2.30E 05	5.90E-01	3.50E 02	2

PRODUCT GAS ORGANIC MODULE COMPOSITE, HEALTH IMPACT

DMEG NO.		COMPOUND NAME	TYPE	CONC E-6 G/SCM	DS	WDS G/S	LCCAT
15 A 080*		STYRENE	T	2.30E 05	5.50E-01	3.23E 02	2
15 B 101*		O-DIETHYL BENZENE	T	2.30E 05	5.22E-01	3.10E 02	2
15 B 102*		M-DIETHYL BENZENE	T	2.30E 05	5.22E-01	3.10E 02	2
15 B 083*		P-XYLENE	T	2.30E 05	5.22E-01	3.10E 02	2
15 B 100*		DIALKYL BENZENES (MW:134-191)	T	2.30E 05	5.22E-01	3.10E 02	2
15 B 105*		M-DIISOPROPYL BENZENE	T	2.30E 05	5.22E-01	3.10E 02	2
15 B 104*		O-DIISOPROPYL BENZENE	T	2.30E 05	5.22E-01	3.10E 02	2
15 B 103*		P-DIETHYL BENZENE	T	2.30E 05	5.22E-01	3.10E 02	2
15 B 082*		M-XYLENE	T	2.30E 05	5.22E-01	3.10E 02	2
15 B 106*		1,4-DI-TERT-BUTYL BENZENE	T	2.30E 05	5.22E-01	3.10E 02	2
85 A 010		URANIUM	S	4.60E 00	5.11E-01	3.01E 02	
16 A 140*	P	1,4-DICHLOROBENZENE	T	2.30E 05	5.11E-01	3.01E 02	2
08 C 040*		ACETAMIDE	T	7.10E 05	5.10E-01	3.00E 02	6
16 A 060*		DIBROMOBENZENES	T	2.30E 05	4.80E-01	2.82E 02	2
16 A 061*		1,2-DIBROMOBENZENE	T	2.30E 05	4.80E-01	2.82E 02	2
16 A 063*		1,4-DIBROMOBENZENE	T	2.30E 05	4.80E-01	2.82E 02	2
16 A 062*		1,3-DIBROMOBENZENE	T	2.30E 05	4.80E-01	2.82E 02	2
16 A 040*		BROMOBENZENE	T	2.30E 05	4.70E-01	2.80E 02	2
72 A 010		IRON (AS FE+2)	S	4.60E 02	4.60E-01	2.71E 02	
25 A 020	W	THIOPHENE	D	1.90E 03	4.22E-01	2.50E 02	
08 C 040*		ACETAMIDE	T	5.70E 05	4.10E-01	2.40E 02	5
23 A 043*		4-METHYLPYRIDINE	T	1.30E 05	3.61E-01	2.13E 02	4
23 A 042*		3-METHYLPYRIDINE	T	1.30E 05	3.61E-01	2.13E 02	4
23 A 041*		2-METHYLPYRIDINE	T	1.30E 05	3.61E-01	2.13E 02	4
02 B 080*	P	TETRACHLOROETHENE	T	2.30E 05	3.43E-01	2.02E 02	2
01 A 080		BUTANES	D	4.60E 05	3.30E-01	1.93E 02	
21 B 100*		BENZO(C)PHENANTHRENE & ALKYL DERIVATIVES	D	6.50E 01	3.00E-01	1.74E 02	3
23 C 062*		3-METHYLINDOLE	T	1.30E 05	2.90E-01	1.70E 02	4
27 A 010		LITHIUM	S	6.30E 00	2.90E-01	1.70E 02	
46 A 010	P	LEAD	S	2.90E 01	1.93E-01	1.14E 02	
21 B 040*	P	BENZ(A)ANTHRACENE	D	8.10E 00	1.80E-01	1.10E 02	2
01 B 060		BUTYLENES	T	1.60E 06	1.80E-01	1.03E 02	1
01 A 040		ETHANE	D	7.90E 05	1.30E-01	7.62E 01	
01 A 060		PROPANE	D	8.00E 05	8.90E-02	5.24E 01	

PRODUCT GAS ORGANIC MODULE COMPOSITE, HEALTH IMPACT

DMEG NO.		COMPOUND NAME	TYPE	CONC E-6 G/SCM	DS	WDS G/S	LCCAT
83 A 010	P	MERCURY	D	3.30E 00	6.60E-02	3.90E 01	
01 B 020		ETHYLENE	D	3.60E 05	6.30E-02	3.71E 01	
78 A 010	P	COPPER	S	1.10E 01	5.50E-02	3.24E 01	
36 A 010		BARIUM	S	2.10E 01	4.20E-02	2.50E 01	
43 A 010		SILICON	S	3.30E 02	3.30E-02	1.94E 01	
50 A 010	P	ANTIMONY	D	< 1.60E 01<	3.20E-02<	1.90E 01	
34 A 010		CALCIUM (AS CA+2)	S	4.60E 02	2.90E-02	1.70E 01	
74 A 010		COBALT	S	> 8.00E-01>	1.60E-02>	9.43E 00	
54 A 010	P	SELENIUM	D	> 3.00E 00>	1.50E-02>	8.84E 00	
22 C 080*	P W	BENZO(B)FLUORANTHENE	D	1.00E 01	1.11E-02	6.60E 00	3
81 A 010	P	ZINC	S	3.10E 01	7.74E-03	4.60E 00	
37 A 010		BORON	S	> 1.30E 01>	4.20E-03>	2.50E 00	
33 A 010		MAGNESIUM	S	2.50E 01	4.20E-03	2.50E 00	
62 A 010		TITANIUM	S	2.40E 01	4.00E-03	2.40E 00	
56 A 010		FLUORINE (AS F-)	S	9.20E 00	3.70E-03	2.20E 00	
39 A 010		GALLIUM	S	1.30E 01	2.60E-03	1.53E 00	
65 A 010		VANADIUM	S	9.20E-01	1.84E-03	1.10E 00	
71 A 010	P	MANGANESE	S	7.10E 00	1.42E-03	8.40E-01	
35 A 010		STRONTIUM	S	4.20E 00	1.40E-03	8.00E-01	
15 A 040	P	TOLUENE	D	2.60E 02	6.84E-04	4.03E-01	
28 A 010		SODIUM	S	3.10E 01	5.84E-04	3.50E-01	
15 B 080		XYLENES	D	4.80E 01	1.10E-04	6.43E-02	
15 B 081		O-XYLENE	D	4.80E 01	1.10E-04	6.43E-02	
15 A 060	P	ETHYL BENZENE	D	3.90E 01	8.90E-05	5.22E-02	
38 A 010		ALUMINUM	S	4.20E-01	8.10E-05	4.80E-02	
63 A 010		ZIRCONIUM (AS ZR+4)	S	2.50E-01	5.00E-05	2.94E-02	
84 B 010		CERIUM	S	8.80E-01	2.40E-05	1.40E-02	
30 A 010		RUBIDIUM (AS RB+)	S	2.00E 00	1.70E-05	9.83E-03	
84 A 010		LANTHANUM	S	1.30E 00	1.20E-05	7.00E-03	
57 A 010		CHLORINE (AS CL-)	S	1.60E 01	0.00E-01	0.00E-01	
21 B 080*		3-METHYLCHOLANTHRENE	D	0.00E-01	0.00E-01	0.00E-01	2
04 A 160*	P	A-CHLOROBUTYL ETHYL ETHER	T	1.30E 05	0.00E-01	0.00E-01	4
29 A 010		POTASSIUM	S	6.90E 01	0.00E-01	0.00E-01	
21 A 120*	PH	ACENAPHTHYLENE	T	6.60E 05	0.00E-01	0.00E-01	3

PRODUCT GAS ORGANIC MODULE COMPOSITE, HEALTH IMPACT

DMEG NO.				COMPOUND NAME	TYPE	CONC E-6 G/SCM	DS	WDS G/S	LCCAT
45	A	010		TIN	S	8.80E-01	0.00E-01	0.00E-01	
21	C	100*	P W	BENZO(A)PYRENE	D	0.00E-01	0.00E-01	0.00E-01	2
21	B	100*		BENZO(C)PHENANTHRENE & ALKYL DERIVATIVES	D	0.00E-01	0.00E-01	0.00E-01	2
21	B	060*	W	7,12-DIMETHYLBENZ(A)ANTHRACENE	D	0.00E-01	0.00E-01	0.00E-01	3
04	A	160*	P	A-CHLOROBUTYL ETHYL ETHER	T	5.70E 05	0.00E-01	0.00E-01	5
21	D	040*	W	DIBENZO(A,I)PYRENE	D	0.00E-01	0.00E-01	0.00E-01	3
22	C	080*	P W	BENZO(B)FLUORANTHENE	D	0.00E-01	0.00E-01	0.00E-01	2
21	C	100*	P W	BENZO(A)PYRENE	D	0.00E-01	0.00E-01	0.00E-01	3
21	B	080*		3-METHYLCHOLANTHRENE	D	0.00E-01	0.00E-01	0.00E-01	3
21	C	080*	P	DIBENZ(A,H)ANTHRACENE	D	0.00E-01	0.00E-01	0.00E-01	3
12	A	020*	P W	N-NITROSODIMETHYLAMINE	D	0.00E-01	0.00E-01	0.00E-01	5
10	C	040*		AMINOTOLUENES	D	0.00E-01	0.00E-01	0.00E-01	5
08	B	060*	W	B-PROPIOLACTONE	D	0.00E-01	0.00E-01	0.00E-01	5
20	A	120*	W	2,4,6-TRINITROPHENOL	D	0.00E-01	0.00E-01	0.00E-01	5
16	A	220*	W	POLYCHLORINATED BIPHENYLS	D	0.00E-01	0.00E-01	0.00E-01	3
23	B	100*	W	DIHYDROACRIDINE	D	0.00E-01	0.00E-01	0.00E-01	5
23	B	220*		DIBENZ(A,J)ACRIDINE	D	0.00E-01	0.00E-01	0.00E-01	5
23	B	240*		DIBENZ(A,H)ACRIDINE	D	0.00E-01	0.00E-01	0.00E-01	5
23	B	260*		DIBENZ(C,H)ACRIDINE	D	0.00E-01	0.00E-01	0.00E-01	5
53	A	010		SULFUR	S	8.60E 02	0.00E-01	0.00E-01	
21	D	080*	PH	BENZO(GHI)PERYLENE	T	2.30E 05	0.00E-01	0.00E-01	2
21	D	080*	PH	BENZO(GHI)PERYLENE	T	6.60E 05	0.00E-01	0.00E-01	3
21	B	060*	W	7,12-DIMETHYLBENZ(A)ANTHRACENE	D	0.00E-01	0.00E-01	0.00E-01	2
21	D	040*	W	DIBENZO(A,I)PYRENE	D	0.00E-01	0.00E-01	0.00E-01	2
22	A	020*	PH	FLUORENE	T	2.30E 05	0.00E-01	0.00E-01	2
22	A	020*	PH	FLUORENE	T	6.60E 05	0.00E-01	0.00E-01	3
58	A	010		BROMINE	S	8.80E-01	0.00E-01	0.00E-01	
21	C	080*	P	DIBENZ(A,H)ANTHRACENE	D	0.00E-01	0.00E-01	0.00E-01	2
21	A	100*	PH	ACENAPHTHENE	T	2.30E 05	0.00E-01	0.00E-01	2
21	A	100*	PH	ACENAPHTHENE	T	6.60E 05	0.00E-01	0.00E-01	3
21	A	120*	PH	ACENAPHTHYLENE	T	2.30E 05	0.00E-01	0.00E-01	2

PRODUCT GAS ORGANIC MODULE COMPOSITE

FLOW RATE = 590 G/S (0.57 SCM/S, DRY BASIS)

5.555 SCM AT 25C AND 760 MM HG SAMPLED

TOTAL ORGANIC LOADING = 8.1 G/SCM

TOTAL TCO = 6.0 G/SCM TOTAL GRAV = 2.2 G/SCM

0.195% ORIGINAL SAMPLE TO LC

LC TCO = 64.7 MG LC GRAV = 24.0 MG LC TOTAL = 88.7 MG

LCCAT	ORGANIC LOADING
1	1600000.0
2	230000.0
3	660000.0
4	130000.0
5	570000.0
6	710000.0
7	2500000.0

FLOW RATE = 590.00

MINIMUM DISCHARGE SEVERITY = .010

STATE: GAS, UNITS IN MICROGRAMS/SCM

IMPACT: ECOLOGY

EXPERIMENTALY DETERMINED DATA

SPARK SOURCE DATA

PRODUCT GAS ORGANIC MODULE COMPOSITE, ECOLOGY IMPACT

DMEG NO.			COMPOUND NAME	TYPE	CONC E-6 G/SCM	DS	WDS G/S	LCCAT
01 B 020		W	ETHYLENE	D	3.60E 05	3.60E 05	2.11E 08	
47 A 060	P		AMMONIA	D	1.10E 07	3.03E 04	1.80E 07	
42 A 070			CARBON MONOXIDE	D	3.00E 08	2.50E 03	1.50E 06	
15 A 120*			ISOPROPYL BENZENE	T	6.60E 05	5.50E 02	3.24E 05	3
15 A 120*			ISOPROPYL BENZENE	T	2.30E 05	1.91E 02	1.13E 05	2
15 A 020	P		BENZENE	D	> 1.30E 04>	1.80E 01>	1.10E 04	
47 A 080	P		HYDROGEN CYANIDE	D	2.22E 05	6.52E 00	3.90E 03	
01 A 020		W	METHANE	D	6.30E 06	9.64E-01	5.70E 02	
65 A 010			VANADIUM	S	9.20E-01	9.20E-01	5.42E 02	
01 B 080			BUTADIENES	T	1.60E 06	7.30E-01	4.30E 02	1
83 A 010	P		MERCURY	D	3.30E 00	3.30E-01	1.94E 02	
01 B 060			BUTYLENES	T	1.60E 06	7.00E-02	4.10E 01	1
01 A 040			ETHANE	D	7.90E 05	6.60E-02	3.90E 01	
15 A 040	P		TOLUENE	D	2.60E 02	5.70E-02	3.33E 01	
01 A 060			PROPANE	D	8.00E 05	4.44E-02	2.62E 01	
01 A 080			BUTANES	D	4.60E 05	1.90E-02	1.12E 01	
15 B 080			XYLENES	D	4.80E 01	0.00E-01	0.00E-01	
53 A 080			CARBONYL SULFIDE	D	3.51E 05	0.00E-01	0.00E-01	
25 A 020			THIOPHENE	D	1.90E 03	0.00E-01	0.00E-01	
42 A 080			CARBON DIOXIDE	D	1.71E 08	0.00E-01	0.00E-01	
53 A 060			SULFUR DIOXIDE	D	4.20E 04	0.00E-01	0.00E-01	
53 A 100			CARBON DISULFIDE	D	3.73E 04	0.00E-01	0.00E-01	
21 B 040*	P		BENZ(A)ANTHRACENE	D	8.10E 00	0.00E-01	0.00E-01	2
21 B 060*			7,12-DIMETHYLBENZ(A)ANTHRACENE	D	0.00E-01	0.00E-01	0.00E-01	2
21 D 040*			DIBENZO(A,I)PYRENE	D	0.00E-01	0.00E-01	0.00E-01	2
21 B 100*			BENZO(C)PHENANTHRENE & ALKYL DERIVATIVES	D	0.00E-01	0.00E-01	0.00E-01	2
15 A 060	P		ETHYL BENZENE	D	3.90E 01	0.00E-01	0.00E-01	
21 B 080*			3-METHYLCHOLANTHRENE	D	0.00E-01	0.00E-01	0.00E-01	2
21 C 080*	P		DIBENZ(A,H)ANTHRACENE	D	0.00E-01	0.00E-01	0.00E-01	2
22 C 080*	P		BENZO(B)FLUORANTHENE	D	0.00E-01	0.00E-01	0.00E-01	2
16 A 220*			POLYCHLORINATED BIPHENYLS	D	0.00E-01	0.00E-01	0.00E-01	3
15 A 160			BIPHENYL	D	5.00E 03	0.00E-01	0.00E-01	3
21 B 040*	P		BENZ(A)ANTHRACENE	D	1.40E 02	0.00E-01	0.00E-01	3
16 A 220*			POLYCHLORINATED BIPHENYLS	D	< 7.20E 00<	0.00E-01<	0.00E-01	2

PRODUCT GAS ORGANIC MODULE COMPOSITE, ECOLOGY IMPACT

DMEG NO.		COMPOUND NAME	TYPE	CONC E-6 G/SCM	DS	WDS G/S	LCCAT
01 A 100		PENTANES	D	5.94E 05	0.00E-01	0.00E-01	
01 A 140		HEXANES	D	6.92E 05	0.00E-01	0.00E-01	
21 B 100*		BENZO(C)PHENANTHRENE & ALKYL DERIVATIVES	D	6.50E 01	0.00E-01	0.00E-01	3
21 C 100*	P	BENZO(A)PYRENE	D	0.00E-01	0.00E-01	0.00E-01	3
21 C 100*	P	BENZO(A)PYRENE	D	0.00E-01	0.00E-01	0.00E-01	2
53 A 090		HYDROGEN SULFIDE	D	1.54E 06	0.00E-01	0.00E-01	
12 A 020*	P	N-NITROSODIMETHYLAMINE	D	0.00E-01	0.00E-01	0.00E-01	5
10 C 040		AMINOTOLUENES	D	0.00E-01	0.00E-01	0.00E-01	5
08 B 060		B-PROPIOLACTONE	D	0.00E-01	0.00E-01	0.00E-01	5
20 A 120		2,4,6-TRINITROPHENOL	D	0.00E-01	0.00E-01	0.00E-01	5
20 B 040		DINITRO-P-CRESOLS	D	9.80E 02	0.00E-01	0.00E-01	5
23 B 100		DIHYDROACRIDINE	D	0.00E-01	0.00E-01	0.00E-01	5
23 B 220		DIBENZ(A,J)ACRIDINE	D	0.00E-01	0.00E-01	0.00E-01	5
23 B 240		DIBENZ(A,H)ACRIDINE	D	0.00E-01	0.00E-01	0.00E-01	5
23 B 260		DIBENZ(C,H)ACRIDINE	D	0.00E-01	0.00E-01	0.00E-01	5
50 A 010	P	ANTIMONY	D	< 1.60E 01<	0.00E-01<	0.00E-01	
49 A 010	P	ARSENIC	D	> 1.80E 01>	0.00E-01>	0.00E-01	
15 B 081		O-XYLENE	D	4.80E 01	0.00E-01	0.00E-01	
54 A 010	P	SELENIUM	D	> 3.00E 00>	0.00E-01>	0.00E-01	
38 A 010		ALUMINUM	S	4.20E-01	0.00E-01	0.00E-01	
36 A 010		BARIUM	S	2.10E 01	0.00E-01	0.00E-01	
37 A 010		BORON	S	> 1.30E 01>	0.00E-01>	0.00E-01	
58 A 010		BROMINE	S	8.80E-01	0.00E-01	0.00E-01	
34 A 010		CALCIUM (AS CA+2)	S	4.60E 02	0.00E-01	0.00E-01	
84 B 010		CERIUM	S	8.80E-01	0.00E-01	0.00E-01	
57 A 010		CHLORINE (AS CL-)	S	1.60E 01	0.00E-01	0.00E-01	
68 A 010	P	CHROMIUM	S	1.50E 01	0.00E-01	0.00E-01	
74 A 010		COBALT	S	> 8.00E-01>	0.00E-01>	0.00E-01	
78 A 010	P	COPPER	S	1.10E 01	0.00E-01	0.00E-01	
56 A 010		FLUORINE (AS F-)	S	9.20E 00	0.00E-01	0.00E-01	
39 A 010		GALLIUM	S	1.30E 01	0.00E-01	0.00E-01	
72 A 010		IRON (AS FE+2)	S	4.60E 02	0.00E-01	0.00E-01	
84 A 010		LANTHANUM	S	1.30E 00	0.00E-01	0.00E-01	
46 A 010	P	LEAD	S	2.90E 01	0.00E-01	0.00E-01	

PRODUCT GAS ORGANIC MODULE COMPOSITE, ECOLOGY IMPACT

DMEG NO.		COMPOUND NAME	TYPE	CONC E-6 G/SCM	DS	WDS G/S	LCCAT
27 A 010		LITHIUM	S	6.30E 00	0.00E-01	0.00E-01	
33 A 010		MAGNESIUM	S	2.50E 01	0.00E-01	0.00E-01	
71 A 010	P	MANGANESE	S	7.10E 00	0.00E-01	0.00E-01	
76 A 010	P	NICKEL	S	9.60E 00	0.00E-01	0.00E-01	
48 A 010		PHOSPHORUS	S	9.40E 01	0.00E-01	0.00E-01	
29 A 010		POTASSIUM	S	6.90E 01	0.00E-01	0.00E-01	
30 A 010		RUBIDIUM (AS RB+)	S	2.00E 00	0.00E-01	0.00E-01	
43 A 010		SILICON	S	5.30E 02	0.00E-01	0.00E-01	
79 A 010	P	SILVER	S	3.00E 01	0.00E-01	0.00E-01	
28 A 010		SODIUM	S	3.10E 01	0.00E-01	0.00E-01	
35 A 010		STRONTIUM	S	4.20E 00	0.00E-01	0.00E-01	
53 A 010		SULFUR	S	8.60E 02	0.00E-01	0.00E-01	
45 A 010		TIN	S	8.80E-01	0.00E-01	0.00E-01	
62 A 010		TITANIUM	S	2.40E 01	0.00E-01	0.00E-01	
85 A 010		URANIUM	S	4.60E 00	0.00E-01	0.00E-01	
21 D 040*		DIBENZO(A,I)PYRENE	D	0.00E-01	0.00E-01	0.00E-01	3
81 A 010	P	ZINC	S	5.10E 01	0.00E-01	0.00E-01	
63 A 010		ZIRCONIUM (AS ZR+4)	S	2.50E-01	0.00E-01	0.00E-01	
21 B 080*		3-METHYLCHOLANTHRENE	D	0.00E-01	0.00E-01	0.00E-01	3
21 C 080*	P	DIBENZ(A,H)ANTHRACENE	D	0.00E-01	0.00E-01	0.00E-01	3
02 A 140*	P	DIBROMOCHLOROMETHANE	T	1.60E 06	0.00E-01	0.00E-01	1
02 A 140*	P	DIBROMOCHLOROMETHANE	T	2.30E 05	0.00E-01	0.00E-01	2
02 A 160*	P	BROMOFORM	T	1.60E 06	0.00E-01	0.00E-01	1
02 A 160*	P	BROMOFORM	T	2.30E 05	0.00E-01	0.00E-01	2
02 A 320*	P	HEXACHLOROETHANE	T	1.60E 06	0.00E-01	0.00E-01	1
02 A 320*	P	HEXACHLOROETHANE	T	2.30E 05	0.00E-01	0.00E-01	2
02 A 340*	P	DICHLOROPROPANES	T	1.60E 06	0.00E-01	0.00E-01	1
02 A 340*	P	DICHLOROPROPANES	T	2.30E 05	0.00E-01	0.00E-01	2
02 B 080*	P	TETRACHLOROETHENE	T	1.60E 06	0.00E-01	0.00E-01	1
02 B 080*	P	TETRACHLOROETHENE	T	2.30E 05	0.00E-01	0.00E-01	2
02 B 100*	P	DICHLOROPROPENES	T	1.60E 06	0.00E-01	0.00E-01	1
02 B 100*	P	DICHLOROPROPENES	T	2.30E 05	0.00E-01	0.00E-01	2
02 B 120*	P	HEXACHLOROBUTADIENE	T	1.60E 06	0.00E-01	0.00E-01	1
02 B 120*	P	HEXACHLOROBUTADIENE	T	2.30E 05	0.00E-01	0.00E-01	2

PRODUCT GAS ORGANIC MODULE COMPOSITE, ECOLOGY IMPACT

DMEG NO.	COMPOUND NAME	TYPE	CONC E-6 G/SCM	DS	WDS G/S	LCCAT
02 B 140* P	HEXACHLOROCYCLOPENTADIENE	T	1.60E 06	0.00E-01	0.00E-01	1
02 B 140* P	HEXACHLOROCYCLOPENTADIENE	T	2.30E 05	0.00E-01	0.00E-01	2
04 A 140* P	2-CHLOROETHYL VINYL ETHER	T	1.30E 05	0.00E-01	0.00E-01	4
04 A 140* P	2-CHLOROETHYL VINYL ETHER	T	5.70E 05	0.00E-01	0.00E-01	5
04 A 160* P	A-CHLOROBUTYL ETHYL ETHER	T	1.30E 05	0.00E-01	0.00E-01	4
04 A 160* P	A-CHLOROBUTYL ETHYL ETHER	T	5.70E 05	0.00E-01	0.00E-01	5
04 A 180* P	CHLOROPHENYL PHENYL ETHER	T	1.30E 05	0.00E-01	0.00E-01	4
04 A 180* P	CHLOROPHENYL PHENYL ETHER	T	5.70E 05	0.00E-01	0.00E-01	5
04 B 020* P	1,1'-DICHLOROMETHYL ETHER	T	1.30E 05	0.00E-01	0.00E-01	4
04 B 020* P	1,1'-DICHLOROMETHYL ETHER	T	5.70E 05	0.00E-01	0.00E-01	5
04 B 040* P	1,1'-DICHLORODIETHYL ETHER	T	1.30E 05	0.00E-01	0.00E-01	4
04 B 040* P	1,1'-DICHLORODIETHYL ETHER	T	5.70E 05	0.00E-01	0.00E-01	5
07 B 080* P	ISOPHORONE	T	5.70E 05	0.00E-01	0.00E-01	5
07 B 080* P	ISOPHORONE	T	7.10E 05	0.00E-01	0.00E-01	6
08 D 280* P	PHTHALATE ESTERS (MW:194-279)	T	5.70E 05	0.00E-01	0.00E-01	5
08 D 280* P	PHTHALATE ESTERS (MW:194-279)	T	7.10E 05	0.00E-01	0.00E-01	6
08 D 300* P	DI-2-ETHYLHEXYL PHTHALATE	T	5.70E 05	0.00E-01	0.00E-01	5
08 D 300* P	DI-2-ETHYLHEXYL PHTHALATE	T	7.10E 05	0.00E-01	0.00E-01	6
08 D 320* P	BUTYL BENZYL PHTHALATE	T	5.70E 05	0.00E-01	0.00E-01	5
08 D 320* P	BUTYL BENZYL PHTHALATE	T	7.10E 05	0.00E-01	0.00E-01	6
10 C 140* P	BENZIDINE	T	5.70E 05	0.00E-01	0.00E-01	5
10 C 140* P	BENZIDINE	T	7.10E 05	0.00E-01	0.00E-01	6
12 A 020* P	N-NITROSODIMETHYLAMINE	T	5.70E 05	0.00E-01	0.00E-01	5
12 A 040* P	N-NITROSODIETHYLAMINE	T	7.10E 05	0.00E-01	0.00E-01	6
12 A 040* P	N-NITROSODIETHYLAMINE	T	7.10E 05	0.00E-01	0.00E-01	6
12 A 060* P	N-NITROSODIPROPYLAMINE	T	5.70E 05	0.00E-01	0.00E-01	5
12 A 060* P	N-NITROSODIPROPYLAMINE	T	7.10E 05	0.00E-01	0.00E-01	6
21 B 060*	7,12-DIMETHYLBENZ(A)ANTHRACENE	T	7.10E 05	0.00E-01	0.00E-01	5
22 C 080* P	BENZO(B)FLUORANTHENE	D	0.00E-01	0.00E-01	0.00E-01	6
16 A 020* P	CHLOROBENZENE	D	1.00E 01	0.00E-01	0.00E-01	3
16 A 020* P	CHLOROBENZENE	T	2.30E 05	0.00E-01	0.00E-01	3
16 A 100* P	1,2-DICHLOROBENZENE	T	6.60E 05	0.00E-01	0.00E-01	2
16 A 100* P	1,2-DICHLOROBENZENE	T	2.30E 05	0.00E-01	0.00E-01	3
16 A 120* P	1,3-DICHLOROBENZENE	T	6.60E 05	0.00E-01	0.00E-01	2
		T	2.30E 05	0.00E-01	0.00E-01	3
						2

PRODUCT GAS ORGANIC MODULE COMPOSITE, ECOLOGY IMPACT

DMEG NO.	COMPOUND NAME	TYPE	CONC E-6 G/SCM	DS	WDS G/S	LCCAT
16 A 120* P	1,3-DICHLOROBENZENE	T	6.60E 05	0.00E-01	0.00E-01	3
16 A 140* P	1,4-DICHLOROBENZENE	T	2.30E 05	0.00E-01	0.00E-01	2
16 A 140* P	1,4-DICHLOROBENZENE	T	6.60E 05	0.00E-01	0.00E-01	3
16 A 160* P	POLYCHLORINATED BENZENES	T	2.30E 05	0.00E-01	0.00E-01	2
16 A 160* P	POLYCHLORINATED BENZENES	T	6.60E 05	0.00E-01	0.00E-01	3
16 A 200* P	CHLORONAPHTHALENES	T	2.30E 05	0.00E-01	0.00E-01	2
16 A 200* P	CHLORONAPHTHALENES	T	6.60E 05	0.00E-01	0.00E-01	3
17 A 020* P	NITROBENZENE	T	1.30E 05	0.00E-01	0.00E-01	4
17 A 020* P	NITROBENZENE	T	5.70E 05	0.00E-01	0.00E-01	5
17 A 081* P	2,6-DINITROTOLUENE	T	1.30E 05	0.00E-01	0.00E-01	4
17 A 081* P	2,6-DINITROTOLUENE	T	5.70E 05	0.00E-01	0.00E-01	5
17 A 084* P	2,4-DINITROTOLUENE	T	1.30E 05	0.00E-01	0.00E-01	4
17 A 084* P	2,4-DINITROTOLUENE	T	5.70E 05	0.00E-01	0.00E-01	5
18 A 020* P	PHENOL	T	5.70E 05	0.00E-01	0.00E-01	5
18 A 020* P	PHENOL	T	7.10E 05	0.00E-01	0.00E-01	6
18 A 142* P	2,4-XYLENOL	T	5.70E 05	0.00E-01	0.00E-01	5
18 A 142* P	2,4-XYLENOL	T	7.10E 05	0.00E-01	0.00E-01	6
19 A 020* P	2-CHLOROPHENOL	T	5.70E 05	0.00E-01	0.00E-01	5
19 A 020* P	2-CHLOROPHENOL	T	7.10E 05	0.00E-01	0.00E-01	6
19 A 040* P	2,4-DICHLOROPHENOL	T	5.70E 05	0.00E-01	0.00E-01	5
19 A 040* P	2,4-DICHLOROPHENOL	T	7.10E 05	0.00E-01	0.00E-01	6
19 A 060* P	PENTACHLOROPHENOL	T	5.70E 05	0.00E-01	0.00E-01	5
19 A 060* P	PENTACHLOROPHENOL	T	7.10E 05	0.00E-01	0.00E-01	6
19 B 022* P	CHLORINATED-M-CRESOLS	T	5.70E 05	0.00E-01	0.00E-01	5
19 B 022* P	CHLORINATED-M-CRESOLS	T	7.10E 05	0.00E-01	0.00E-01	6
20 A 020* P	2-NITROPHENOL	T	5.70E 05	0.00E-01	0.00E-01	5
20 A 020* P	2-NITROPHENOL	T	7.10E 05	0.00E-01	0.00E-01	6
20 A 060* P	4-NITROPHENOL	T	5.70E 05	0.00E-01	0.00E-01	5
20 A 060* P	4-NITROPHENOL	T	7.10E 05	0.00E-01	0.00E-01	6
20 A 101* P	2,4-DINITROPHENOL	T	5.70E 05	0.00E-01	0.00E-01	5
20 A 101* P	2,4-DINITROPHENOL	T	7.10E 05	0.00E-01	0.00E-01	6
20 B 020* P	4,6-DINITRO-O-CRESOL	T	5.70E 05	0.00E-01	0.00E-01	5
20 B 020* P	4,6-DINITRO-O-CRESOL	T	7.10E 05	0.00E-01	0.00E-01	6
21 A 020* P	NAPHTHALENE	T	2.30E 05	0.00E-01	0.00E-01	2

PRODUCT GAS ORGANIC MODULE COMPOSITE, ECOLOGY IMPACT

DMEG NO.		COMPOUND NAME	TYPE	CONC E-6 G/SCM	DS	WDS G/S	LCCAT
21 A 020*	P	NAPHTHALENE	T	6.60E 05	0.00E-01	0.00E-01	3
21 A 100*	PH	ACENAPHTHENE	T	2.30E 05	0.00E-01	0.00E-01	2
21 A 100*	PH	ACENAPHTHENE	T	6.60E 05	0.00E-01	0.00E-01	3
21 A 120*	PH	ACENAPHTHYLENE	T	2.30E 05	0.00E-01	0.00E-01	2
21 A 120*	PH	ACENAPHTHYLENE	T	6.60E 05	0.00E-01	0.00E-01	3
21 A 140*	P	ANTHRACENE	T	2.30E 05	0.00E-01	0.00E-01	2
21 A 140*	P	ANTHRACENE	T	6.60E 05	0.00E-01	0.00E-01	3
21 A 180*	P	PHENANTHRENE	T	2.30E 05	0.00E-01	0.00E-01	2
21 A 180*	P	PHENANTHRENE	T	6.60E 05	0.00E-01	0.00E-01	3
21 B 120*	P	CHRYSENE	T	2.30E 05	0.00E-01	0.00E-01	2
21 B 120*	P	CHRYSENE	T	6.60E 05	0.00E-01	0.00E-01	3
21 B 180*	P	PYRENE	T	2.30E 05	0.00E-01	0.00E-01	2
21 B 180*	P	PYRENE	T	6.60E 05	0.00E-01	0.00E-01	3
21 D 080*	PH	BENZO(GHI)PERYLENE	T	2.30E 05	0.00E-01	0.00E-01	2
21 D 080*	PH	BENZO(GHI)PERYLENE	T	6.60E 05	0.00E-01	0.00E-01	3
22 A 020*	PH	FLUORENE	T	2.30E 05	0.00E-01	0.00E-01	2
22 A 020*	PH	FLUORENE	T	6.60E 05	0.00E-01	0.00E-01	3
22 B 040*	P	FLUORANTHENE	T	2.30E 05	0.00E-01	0.00E-01	2
22 B 040*	P	FLUORANTHENE	T	6.60E 05	0.00E-01	0.00E-01	3
22 C 020*	P	BENZO(K)FLUORANTHENE	T	2.30E 05	0.00E-01	0.00E-01	2
22 C 020*	P	BENZO(K)FLUORANTHENE	T	6.60E 05	0.00E-01	0.00E-01	3
22 D 020*	P	INDENO(1,2,3-CD)PYRENE	T	2.30E 05	0.00E-01	0.00E-01	2
22 D 020*	P	INDENO(1,2,3-CD)PYRENE	T	6.60E 05	0.00E-01	0.00E-01	3

TEST BURNER FLUE GAS COMPOSITE

FLOW RATE = 8080 G/S (6.77 SCM/S, DRY BASIS)

29.686 SCM AT 25C AND 760 MM HG SAMPLED

TOTAL ORGANIC LOADING = 5.4 MG/SCM

TOTAL TCO = NR TOTAL GRAV = 5.4 MG/SCM

55.0% ORIGINAL SAMPLE TO LC

LC TCO = NR LC GRAV = 90.3 MG LC TOTAL = 90.3 MG

LCCAT	ORGANIC LOADING
1	880.0
2	130.0
3	44.0
4	130.0
5	470.0
6	2200.0
7	910.0

FLOW RATE = 8080.00

STATE: GAS, UNITS IN MICROGRAMS/SCM

IMPACT: HEALTH

EXPERIMENTALY DETERMINED DATA

SPARK SOURCE DATA

TEST BURNER FLUE GAS COMPOSITE, HEALTH IMPACT

OMEG NO.				COMPOUND NAME	TYPE	CONC E-6 G/SCM	DS	WDS G/S	LCCAT
21 C 100*	P	W		BENZO(A)PYRENE	T	4.40E 01	2.20E 03	1.80E 07	3
21 C 080*	P			DIBENZ(A,H)ANTHRACENE	T	4.40E 01	4.73E 02	3.82E 06	3
04 B 020*	P	W		1,1'-DICHLOROMETHYL ETHER	T	4.70E 02	9.40E 01	7.60E 05	5
16 A 220*		W		POLYCHLORINATED BIPHENYLS	T	4.40E 01	4.40E 01	3.60E 05	3
49 A 010	P			ARSENIC	D	8.60E 01	4.30E 01	3.50E 05	
68 A 010	P			CHROMIUM	S	3.70E 01	3.70E 01	3.00E 05	
21 B 080*				3-METHYLCHOLANTHRENE	T	1.30E 02	3.42E 01	2.80E 05	2
12 A 020*	P	W		N-NITROSODIMETHYLAMINE	T	2.20E 03	3.40E 01	2.73E 05	6
04 B 020*	P	W		1,1'-DICHLOROMETHYL ETHER	T	1.30E 02	2.60E 01	2.10E 05	4
20 A 120*		W		2,4,6-TRINITROPHENOL	T	2.20E 03	2.20E 01	1.80E 05	6
10 C 100*				1,4-DIAMINOBENZENE	T	2.20E 03	2.20E 01	1.80E 05	6
53 A 060				SULFUR DIOXIDE	D	2.70E 05	2.10E 01	1.70E 05	
10 C 040*				AMINOTOLUENES	T	2.20E 03	2.00E 01	1.61E 05	6
10 C 043*				4-AMINOTOLUENE	T	2.20E 03	2.00E 01	1.61E 05	6
10 C 041*				2-AMINOTOLUENE	T	2.20E 03	2.00E 01	1.61E 05	6
10 C 042*				3-AMINOTOLUENE	T	2.20E 03	2.00E 01	1.61E 05	6
12 A 040*	P			N-NITROSODIETHYLAMINE	T	2.20E 03	1.83E 01	1.50E 05	6
23 B 100*		W		DIHYDROACRIDINE	T	2.20E 03	1.40E 01	1.11E 05	6
10 C 220*				2-AMINONAPHTHALENE	T	2.20E 03	1.30E 01	1.04E 05	6
21 B 080*				3-METHYLCHOLANTHRENE	T	4.40E 01	1.20E 01	9.40E 04	3
20 B 042*				2,6-DINITRO-P-CRESOL	T	2.20E 03	1.10E 01	8.90E 04	6
20 B 041*				3,5-DINITRO-P-CRESOL	T	2.20E 03	1.10E 01	8.90E 04	6
20 B 020*	P	W		4,6-DINITRO-O-CRESOL	T	2.20E 03	1.10E 01	8.90E 04	6
20 B 040*		W		DINITRO-P-CRESOLS	T	2.20E 03	1.10E 01	8.90E 04	6
42 A 080				CARBON DIOXIDE	D	9.80E 07	1.10E 01	8.80E 04	
21 B 040*	P			BENZ(A)ANTHRACENE	D	4.50E 02	1.00E 01	8.10E 04	2
23 B 240*				DIBENZ(A,H)ACRIDINE	T	2.20E 03	1.00E 01	8.10E 04	6
23 B 220*				DIBENZ(A,J)ACRIDINE	T	2.20E 03	8.80E 00	7.11E 04	6
02 B 140*	P	W		HEXACHLOROCYCLOPENTADIENE	T	8.80E 02	8.00E 00	6.50E 04	1
12 A 020*	P	W		N-NITROSODIMETHYLAMINE	T	4.70E 02	7.23E 00	5.84E 04	5
08 B 060*		W		B-PROPIOLACTONE	T	2.20E 03	6.90E 00	5.60E 04	6
20 A 120*		W		2,4,6-TRINITROPHENOL	T	4.70E 02	4.70E 00	3.80E 04	5
10 C 100*				1,4-DIAMINOBENZENE	T	4.70E 02	4.70E 00	3.80E 04	5
23 C 160*		W		DIBENZO(C,G)CARBAZOLE	T	4.70E 02	4.70E 00	3.80E 04	5

TEST BURNER FLUE GAS COMPOSITE, HEALTH IMPACT

DMEG NO.			COMPOUND NAME	TYPE	CONC E-6 G/SCM	DS	WDS G/S	LCCAT
10 C 080*			ANISIDINES	T	2.20E 03	4.40E 00	3.60E 04	6
19 A 060*	P	W	PENTACHLOROPHENOL	T	2.20E 03	4.40E 00	3.60E 04	6
10 C 081*			O-ANISIDINE	T	2.20E 03	4.40E 00	3.60E 04	6
10 C 083*			P-ANISIDINE	T	2.20E 03	4.40E 00	3.60E 04	6
10 C 082*			M-ANISIDINE	T	2.20E 03	4.40E 00	3.60E 04	6
13 A 100*		W	BENZENETHIOL	T	2.20E 03	4.40E 00	3.60E 04	6
10 C 043*			4-AMINOTOLUENE	T	4.70E 02	4.30E 00	3.50E 04	5
10 C 042*			3-AMINOTOLUENE	T	4.70E 02	4.30E 00	3.50E 04	5
10 C 040*			AMINOTOLUENES	T	4.70E 02	4.30E 00	3.50E 04	5
10 C 041*			2-AMINOTOLUENE	T	4.70E 02	4.30E 00	3.50E 04	5
10 C 200*			1-AMINONAPHTHALENE	T	4.70E 02	4.30E 00	3.50E 04	5
12 A 040*	P		N-NITROSODIETHYLAMINE	T	2.20E 03	3.92E 00	3.20E 04	6
21 D 040*		W	DIBENZO(A,I)PYRENE	T	4.70E 02	3.91E 00	3.20E 04	5
76 A 010	P		NICKEL	T	1.30E 02	3.02E 00	2.44E 04	2
23 B 100*		W	DIHYDROACRIDINE	S	4.50E 01	3.00E 00	2.42E 04	
08 B 060*		W	B-PROPIOLACTONE	T	4.70E 02	2.93E 00	2.40E 04	5
10 C 220*			2-AMINONAPHTHALENE	T	9.10E 02	2.84E 00	2.30E 04	7
13 A 140*			PERCHLOROMETHANETHIOL	T	4.70E 02	2.80E 00	2.23E 04	5
74 A 010			COBALT	T	2.20E 03	2.80E 00	2.22E 04	6
20 B 042*			2,6-DINITRO-P-CRESOL	S	1.30E 02	2.60E 00	2.10E 04	
20 B 020*	P	W	4,6-DINITRO-O-CRESOL	T	4.70E 02	2.34E 00	1.90E 04	5
20 B 040*		W	DINITRO-P-CRESOLS	T	4.70E 02	2.34E 00	1.90E 04	5
20 B 041*			3,5-DINITRO-P-CRESOL	T	4.70E 02	2.34E 00	1.90E 04	5
08 A 121*			MYRISTIC ACID	T	4.70E 02	2.34E 00	1.90E 04	5
08 A 122*			PALMITIC ACID	T	2.20E 03	2.20E 00	1.80E 04	6
10 C 140*	P		BENZIDINE	T	2.20E 03	2.20E 00	1.80E 04	6
08 C 060*		W	6-HEXANELACTAM	T	2.20E 03	2.20E 00	1.80E 04	6
08 A 120*		W	SATURATED LONG CHAIN ACIDS (MW:228-285)	T	2.20E 03	2.20E 00	1.80E 04	6
08 A 123*			STEARIC ACID	T	2.20E 03	2.20E 00	1.80E 04	6
23 B 240*			DIBENZ(A,H)ACRIDINE	T	4.70E 02	2.13E 00	1.72E 04	5
23 B 220*			DIBENZ(A,J)ACRIDINE	T	4.70E 02	1.90E 00	1.51E 04	5
02 A 380*		W	HEXACHLOROCYCLOHEXANE	T	8.80E 02	1.80E 00	1.42E 04	1
48 A 010			PHOSPHORUS	S	1.70E 02	1.70E 00	1.40E 04	
12 B 020*		W	N-METHYL-N-NITROSOANILINE	T	2.20E 03	1.70E 00	1.40E 04	6

TEST BURNER FLUE GAS COMPOSITE, HEALTH IMPACT

OMEG NO.			COMPOUND NAME	TYPE	CONC E-6 G/SCM	DS	WDS G/S	LCCAT
10 C 120*			4-AMINOBIPHENYL	T	2.20E 03	1.70E 00	1.40E 04	6
20 A 080*			2-AMINO-4,6-DINITROPHENOL	T	2.20E 03	1.60E 00	1.30E 04	6
20 A 101*	P		2,4-DINITROPHENOL	T	2.20E 03	1.60E 00	1.30E 04	6
20 A 102*			2,5-DINITROPHENOL	T	2.20E 03	1.60E 00	1.30E 04	6
20 A 103*			2,6-DINITROPHENOL	T	2.20E 03	1.60E 00	1.30E 04	6
20 A 100*			DINITROPHENOLS	T	2.20E 03	1.60E 00	1.30E 04	6
08 B 060*		W	B-PROPIOLACTONE	T	4.70E 02	1.50E 00	1.20E 04	5
23 C 160*		W	DIBENZO(C,G)CARBAZOLE	T	1.30E 02	1.30E 00	1.10E 04	4
02 B 140*	P	W	HEXACHLOROCYCLOPENTADIENE	T	1.30E 02	1.20E 00	9.54E 03	2
14 B 020		W	DIMETHYL SULFOXIDE	T	9.10E 02	1.12E 00	9.10E 03	7
18 B 060*		W	1,4-DIHYDROXYBENZENE	T	2.20E 03	1.10E 00	8.90E 03	6
21 D 040*		W	DIBENZO(A,I)PYRENE	T	4.40E 01	1.02E 00	8.30E 03	3
21 B 040*	P		BENZ(A)ANTHRACENE	T	4.40E 01	9.80E-01	7.90E 03	3
19 A 060*	P	W	PENTACHLOROPHENOL	T	4.70E 02	9.40E-01	7.60E 03	5
10 C 080*			ANISIDINES	T	4.70E 02	9.40E-01	7.60E 03	5
10 C 081*			O-ANISIDINE	T	4.70E 02	9.40E-01	7.60E 03	5
10 C 083*			P-ANISIDINE	T	4.70E 02	9.40E-01	7.60E 03	5
10 C 082*			M-ANISIDINE	T	4.70E 02	9.40E-01	7.60E 03	5
13 A 100*		W	BENZENETHIOL	T	4.70E 02	9.40E-01	7.60E 03	5
12 A 060*	P		N-NITROSODIPROPYLAMINE	T	2.20E 03	9.20E-01	7.40E 03	6
08 A 121*			MYRISTIC ACID	T	9.10E 02	9.10E-01	7.40E 03	7
08 A 122*			PALMITIC ACID	T	9.10E 02	9.10E-01	7.40E 03	7
08 A 120*		W	SATURATED LONG CHAIN ACIDS (MW:228-285)	T	9.10E 02	9.10E-01	7.40E 03	7
08 A 123*			STEARIC ACID	T	9.10E 02	9.10E-01	7.40E 03	7
10 C 200*			1-AMINONAPHTHALENE	T	4.70E 02	8.40E-01	6.80E 03	5
08 A 140*			OLEIC ACID	T	2.20E 03	6.70E-01	5.40E 03	6
77 A 010			PLATINUM	S	1.30E 00	6.50E-01	5.30E 03	
54 A 010	P		SELENIUM	D	< 1.30E 02<	6.50E-01<	5.30E 03	
02 A 180*			DIBROMODICHLOROMETHANE	T	8.80E 02	6.30E-01	5.10E 03	1
21 B 108*			2-ETHYL BENZO(C)PHENANTHRENE	T	1.30E 02	5.90E-01	4.80E 03	2
21 B 102*			1-METHYL BENZO(C)PHENANTHRENE	T	1.30E 02	5.90E-01	4.80E 03	2
21 B 100*			BENZO(C)PHENANTHRENE & ALKYL DERIVATIVES	T	1.30E 02	5.90E-01	4.80E 03	2
21 B 10A*			N-PROPYL BENZO(C)PHENANTHRENE	T	1.30E 02	5.90E-01	4.80E 03	2
21 B 108*			ISOPROPYL BENZO(C)PHENANTHRENE	T	1.30E 02	5.90E-01	4.80E 03	2

TEST BURNER FLUE GAS COMPOSITE, HEALTH IMPACT

DMEG NO.			COMPOUND NAME	TYPE	CONC E-6 G/SCM	DS	WDS G/S	LCCAT
21 B 106*			7-METHYL BENZO(C)PHENANTHRENE	T	1.30E 02	5.90E-01	4.80E 03	2
21 B 104*			5-METHYL BENZO(C)PHENANTHRENE	T	1.30E 02	5.90E-01	4.80E 03	2
21 B 107*			8-METHYL BENZO(C)PHENANTHRENE	T	1.30E 02	5.90E-01	4.80E 03	2
21 B 103*			2-METHYL BENZO(C)PHENANTHRENE	T	1.30E 02	5.90E-01	4.80E 03	2
21 B 101*			BENZO(C)PHENANTHRENE	T	1.30E 02	5.90E-01	4.80E 03	2
21 B 105*			6-METHYL BENZO(C)PHENANTHRENE	T	1.30E 02	5.90E-01	4.80E 03	2
21 B 109*			6-ETHYL BENZO(C)PHENANTHRENE	T	1.30E 02	5.90E-01	4.80E 03	2
13 A 140*			PERCHLOROMETHANETHIOL	T	1.30E 02	5.90E-01	4.80E 03	2
23 D 020*		W	BENZOTHIAZOLE	T	4.70E 02	5.90E-01	4.74E 03	5
08 A 123*			STEARIC ACID	T	2.20E 03	5.11E-01	4.13E 03	6
08 A 122*			PALMITIC ACID	T	4.70E 02	4.70E-01	3.80E 03	5
10 C 140*	P		BENZIDINE	T	4.70E 02	4.70E-01	3.80E 03	5
17 B 040*		W	1-CHLORO-2-NITROBENZENE	T	4.70E 02	4.70E-01	3.80E 03	5
08 A 120*		W	SATURATED LONG CHAIN ACIDS (MW:228-285)	T	4.70E 02	4.70E-01	3.80E 03	5
17 B 060*		W	1-CHLORO-4-NITROBENZENE	T	4.70E 02	4.70E-01	3.80E 03	5
08 C 060*		W	6-HEXANELACTAM	T	4.70E 02	4.70E-01	3.80E 03	5
08 A 121*			MYRISTIC ACID	T	4.70E 02	4.70E-01	3.80E 03	5
23 D 040*			METHYL BENZOTHIAZOLE	T	4.70E 02	4.70E-01	3.80E 03	5
08 D 281*			DIMETHYL PHTHALATE	T	2.20E 03	4.70E-01	3.80E 03	6
08 D 282*			DIETHYL PHTHALATE	T	2.20E 03	4.40E-01	3.60E 03	6
08 D 283*			DI-N-BUTYL PHTHALATE	T	2.20E 03	4.40E-01	3.60E 03	6
08 D 280*	P	W	PHTHALATE ESTERS (MW:194-279)	T	2.20E 03	4.40E-01	3.60E 03	6
08 D 300	P		DI-2-ETHYLHEXYL PHTHALATE	T	2.20E 03	4.40E-01	3.60E 03	6
08 A 100			SATURATED LONG CHAIN ACIDS (MW:116-201)	T	2.20E 03	4.40E-01	3.60E 03	6
08 A 103*			CAPRIC ACID	T	2.20E 03	3.80E-01	3.10E 03	6
08 A 101*			CAPROIC ACID	T	2.20E 03	3.80E-01	3.10E 03	6
08 A 104*			LAURIC ACID	T	2.20E 03	3.80E-01	3.10E 03	6
08 A 102*			CAPRYLIC ACID	T	2.20E 03	3.80E-01	3.10E 03	6
23 A 103*			4-CHLOROPYRIDINE	T	2.20E 03	3.80E-01	3.10E 03	6
23 A 102*			3-CHLOROPYRIDINE	T	2.20E 03	3.72E-01	3.01E 03	6
23 A 101*			2-CHLOROPYRIDINE	T	2.20E 03	3.72E-01	3.01E 03	6
23 A 100*		W	CHLOROPYRIDINES	T	2.20E 03	3.72E-01	3.01E 03	6
10 A 060*			ETHANOLAMINE	T	2.20E 03	3.72E-01	3.01E 03	6
10 C 120*			4-AMINOBIPHENYL	T	2.20E 03	3.70E-01	3.00E 03	6
				T	4.70E 02	3.61E-01	2.92E 03	5

TEST BURNER FLUE GAS COMPOSITE, HEALTH IMPACT

DMEG NO.			COMPOUND NAME	TYPE	CONC E-6 G/SCM	DS	WDS G/S	LCCAT
12 B 020*		W	N-METHYL-N-NITROSOANILINE	T	4.70E 02	3.61E-01	2.92E 03	5
17 A 060*		W	4-NITROBIPHENYL	T	4.70E 02	3.61E-01	2.92E 03	5
20 A 102*			2,5-DINITROPHENOL	T	4.70E 02	3.40E-01	2.71E 03	5
20 A 100*			DINITROPHENOLS	T	4.70E 02	3.40E-01	2.71E 03	5
20 A 103*			2,6-DINITROPHENOL	T	4.70E 02	3.40E-01	2.71E 03	5
20 A 080*			2-AMINO-4,6-DINITROPHENOL	T	4.70E 02	3.40E-01	2.71E 03	5
20 A 101*		P	2,4-DINITROPHENOL	T	4.70E 02	3.40E-01	2.71E 03	5
83 A 010		P	MERCURY	D	1.60E 01	3.20E-01	2.60E 03	
19 A 040*		P	2,4-DICHLOROPHENOL	T	2.20E 03	3.14E-01	2.53E 03	6
17 A 085*			2,5-DINITROTOLUENE	T	4.70E 02	3.13E-01	2.53E 03	5
17 A 083*			2,3-DINITROTOLUENE	T	4.70E 02	3.13E-01	2.53E 03	5
17 A 080*			DINITROTOLUENES	T	4.70E 02	3.13E-01	2.53E 03	5
17 A 082*			3,4-DINITROTOLUENE	T	4.70E 02	3.13E-01	2.53E 03	5
17 A 081*		P	2,6-DINITROTOLUENE	T	4.70E 02	3.13E-01	2.53E 03	5
17 A 084*		P	2,4-DINITROTOLUENE	T	4.70E 02	3.13E-01	2.53E 03	5
17 A 086*			3,5-DINITROTOLUENE	T	4.70E 02	3.13E-01	2.53E 03	5
72 A 010			IRON (AS FE+2)	S	> 3.10E 02>	3.10E-01>	2.50E 03	
08 A 140*			OLEIC ACID	T	9.10E 02	2.80E-01	2.22E 03	7
02 A 380*		W	HEXACHLOROCYCLOHEXANE	T	1.30E 02	2.60E-01	2.10E 03	2
36 A 010			BARIUM	S	> 1.20E 02>	2.40E-01>	1.93E 03	
18 B 060*		W	1,4-DIHYDROXYBENZENE	T	4.70E 02	2.40E-01	1.90E 03	5
04 A 060*		W	1-CHLORO-1,3-EPOXYPROPANE	T	4.70E 02	2.40E-01	1.90E 03	5
04 A 040*		W	2-CHLORO-1,2-EPOXYPROPANE	T	4.70E 02	2.40E-01	1.90E 03	5
04 A 050*		W	EPICHLORHYDRIN	T	4.70E 02	2.40E-01	1.90E 03	5
18 A 043*			P-CRESOL	T	2.20E 03	2.20E-01	1.80E 03	6
18 A 083*			P-ETHYLPHENOL	T	2.20E 03	2.20E-01	1.80E 03	6
18 A 081*			O-ETHYLPHENOL	T	2.20E 03	2.20E-01	1.80E 03	6
18 A 040*		W	CRESOLS	T	2.20E 03	2.20E-01	1.80E 03	6
06 A 020*		W	ETHYLENE GLYCOL	T	2.20E 03	2.20E-01	1.80E 03	6
18 A 042*			O-CRESOL	T	2.20E 03	2.20E-01	1.80E 03	6
18 A 041*			M-CRESOL	T	2.20E 03	2.20E-01	1.80E 03	6
18 A 082*			M-ETHYLPHENOL	T	2.20E 03	2.20E-01	1.80E 03	6
18 A 080*		W	ETHYLPHENOLS	T	2.20E 03	2.20E-01	1.80E 03	6
02 B 120*		P	HEXACHLOROBUTADIENE	T	8.80E 02	2.14E-01	1.73E 03	1

TEST BURNER FLUE GAS COMPOSITE, HEALTH IMPACT

DMEG NO.		COMPOUND NAME	TYPE	CONC E-6 G/SCM	DS	WDS G/S	LCCAT
21 B 107*		8-METHYL BENZO(C)PHENANTHRENE	T	4.40E 01	2.00E-01	1.61E 03	3
23 B 200*		BENZ(C)ACRIDINE	T	2.20E 03	2.00E-01	1.61E 03	6
21 B 101*		BENZO(C)PHENANTHRENE	T	4.40E 01	2.00E-01	1.61E 03	3
21 B 105*		6-METHYL BENZO(C)PHENANTHRENE	T	4.40E 01	2.00E-01	1.61E 03	3
21 B 102*		1-METHYL BENZO(C)PHENANTHRENE	T	4.40E 01	2.00E-01	1.61E 03	3
21 B 108*		ISOPROPYL BENZO(C)PHENANTHRENE	T	4.40E 01	2.00E-01	1.61E 03	3
21 B 109*		2-ETHYL BENZO(C)PHENANTHRENE	T	4.40E 01	2.00E-01	1.61E 03	3
21 B 103*		6-ETHYL BENZO(C)PHENANTHRENE	T	4.40E 01	2.00E-01	1.61E 03	3
21 B 100*		2-METHYL BENZO(C)PHENANTHRENE	T	4.40E 01	2.00E-01	1.61E 03	3
21 B 104*		BENZO(C)PHENANTHRENE & ALKYL DERIVATIVES	T	4.40E 01	2.00E-01	1.61E 03	3
21 B 106*		5-METHYL BENZO(C)PHENANTHRENE	T	4.40E 01	2.00E-01	1.61E 03	3
21 B 10A*		7-METHYL BENZO(C)PHENANTHRENE	T	4.40E 01	2.00E-01	1.61E 03	3
12 A 060*	P	N-PROPYL BENZO(C)PHENANTHRENE	T	4.40E 01	2.00E-01	1.61E 03	3
07 B 100*	W	N-NITROSODIPROPYLAMINE	T	4.70E 02	2.00E-01	1.60E 03	5
02 A 160*	P	CAMPHOR	T	2.20E 03	1.83E-01	1.50E 03	6
23 C 020*		BROMOFORM	T	8.80E 02	1.80E-01	1.42E 03	1
18 A 144*		PYRROLE	T	4.70E 02	1.74E-01	1.40E 03	5
18 A 141*		2,6-XYLENOL	T	2.20E 03	1.70E-01	1.40E 03	6
18 A 140*		2,3-XYLENOL	T	2.20E 03	1.70E-01	1.40E 03	6
18 A 143*		XYLENOLS	T	2.20E 03	1.70E-01	1.40E 03	6
18 A 145*		2,5-XYLENOL	T	2.20E 03	1.70E-01	1.40E 03	6
18 A 142*	P	3,5-XYLENOL	T	2.20E 03	1.70E-01	1.40E 03	6
18 A 146*		2,4-XYLENOL	T	2.20E 03	1.70E-01	1.40E 03	6
08 D 080*		3,4-XYLENOL	T	2.20E 03	1.70E-01	1.40E 03	6
08 A 103*		METHYL METHACRYLATE	T	2.20E 03	1.60E-01	1.50E 03	6
08 A 104*		CAPRIC ACID	T	9.10E 02	1.60E-01	1.50E 03	7
08 A 102*		LAURIC ACID	T	9.10E 02	1.60E-01	1.50E 03	7
08 A 101*		CAPRYLIC ACID	T	9.10E 02	1.60E-01	1.30E 03	7
08 A 100*		CAPROIC ACID	T	9.10E 02	1.60E-01	1.50E 03	7
09 A 120*	W	SATURATED LONG CHAIN ACIDS (MW:116-201)	T	9.10E 02	1.60E-01	1.30E 03	7
23 A 020*		TETRAMETHYLSUCCINONITRILE	T	4.70E 02	1.60E-01	1.30E 03	5
22 C 080*	P W	PYRIDINE	T	2.20E 03	1.50E-01	1.20E 03	6
08 A 140*		BENZO(B)FLUORANTHENE	T	1.30E 02	1.44E-01	1.20E 03	2
		OLEIC ACID	T	4.70E 02	1.42E-01	1.20E 03	5

TEST BURNER FLUE GAS COMPOSITE, HEALTH IMPACT

DMEG NO.			COMPOUND NAME	TYPE	CONC E-6 G/SCM	US	WDS G/S	LCCAT
23 B 021*			QUINOLINE	T	2.20E 03	1.40E-01	1.11E 03	6
23 B 022*			ISOQUINOLINE	T	2.20E 03	1.40E-01	1.11E 03	6
23 B 020*			QUINOLINES	T	2.20E 03	1.40E-01	1.11E 03	6
20 A 060*	P		4-NITROPHENOL	T	2.20E 03	1.40E-01	1.11E 03	6
03 B 020*		W	1,4-DIOXANE	T	4.70E 02	1.30E-01	1.10E 03	5
03 B 040*		W	1,3-DIOXANE	T	4.70E 02	1.30E-01	1.10E 03	5
17 B 040*		W	1-CHLORO-2-NITROBENZENE	T	1.30E 02	1.30E-01	1.10E 03	4
15 A 160*		W	BIPHENYL	T	1.30E 02	1.30E-01	1.10E 03	2
17 B 060*		W	1-CHLORO-4-NITROBENZENE	T	1.30E 02	1.30E-01	1.10E 03	4
23 A 146*			2,3,4,6-TETRAMETHYL PYRIDINE	T	2.20E 03	1.22E-01	9.90E 02	6
23 A 143*			2,5-DIMETHYLPYRIDINE	T	2.20E 03	1.22E-01	9.90E 02	6
23 A 145*			3,4-DIMETHYLPYRIDINE	T	2.20E 03	1.22E-01	9.90E 02	6
23 A 144*			2,6-DIMETHYLPYRIDINE	T	2.20E 03	1.22E-01	9.90E 02	6
05 B 100*		W	1-PHENYLETHANOL	T	2.20E 03	1.22E-01	9.90E 02	6
23 A 142*			2,4-DIMETHYLPYRIDINE	T	2.20E 03	1.22E-01	9.90E 02	6
23 A 140*			DISUBSTITUTED POLYSUBSTITUTED ALKYL PYRIDINES	T	2.20E 03	1.22E-01	9.90E 02	6
23 A 141*			2,3-DIMETHYLPYRIDINE	T	2.20E 03	1.22E-01	9.90E 02	6
21 D 060*			DIBENZO(A,L)PYRENE	T	1.30E 02	1.20E-01	9.54E 02	2
10 C 020*			ANILINE	T	2.20E 03	1.20E-01	9.40E 02	6
18 A 020*	P		PHENOL	T	2.20E 03	1.20E-01	9.40E 02	6
18 B 020*			CATECHOL	T	2.20E 03	1.10E-01	8.90E 02	6
20 A 040*			3-NITROPHENOL	T	2.20E 03	1.10E-01	8.90E 02	6
23 D 020*		W	BENZOTHIAZOLE	T	4.70E 02	1.10E-01	8.83E 02	5
17 A 060*		W	4-NITROBIPHENYL	T	1.30E 02	1.00E-01	8.10E 02	4
23 D 040*			METHYL BENZOTHIAZOLE	T	4.70E 02	1.00E-01	8.10E 02	5
46 A 010	P		LEAD	S	1.50E 01	1.00E-01	8.10E 02	
23 B 260*			DIBENZ(C,H)ACRIDINE	T	2.20E 03	9.60E-02	7.72E 02	6
19 B 020*		W	CHLORINATED CRESOLS	T	2.20E 03	9.60E-02	7.72E 02	6
18 A 103*			M-PHENYLPHENOL	T	2.20E 03	9.60E-02	7.72E 02	6
18 A 101*			O-PHENYLPHENOL	T	2.20E 03	9.60E-02	7.72E 02	6
19 B 023*			CHLORINATED-P-CRESOLS	T	2.20E 03	9.60E-02	7.72E 02	6
19 B 022*	P		CHLORINATED-M-CRESOLS	T	2.20E 03	9.60E-02	7.72E 02	6
18 A 100*			PHENYLPHENOLS	T	2.20E 03	9.60E-02	7.72E 02	6
08 A 080*			VALERIC ACID	T	2.20E 03	9.60E-02	7.72E 02	6

TEST BURNER FLUE GAS COMPOSITE, HEALTH IMPACT

DMEG NO.		COMPOUND NAME	TYPE	CONC E-6 G/SCM	DS	WDS G/S	LCCAT
19 B 021*		CHLORINATED-O-CRESOLS	T	2.20E 03	9.60E-02	7.72E 02	6
18 A 102*		P-PHENYLPHENOL	T	2.20E 03	9.60E-02	7.72E 02	6
08 D 300*	P	DI-2-ETHYLHEXYL PHTHALATE	T	4.70E 02	9.40E-02	7.60E 02	5
08 D 282*		DIETHYL PHTHALATE	T	4.70E 02	9.40E-02	7.60E 02	5
08 D 280*	P W	PHTHALATE ESTERS (MW:194-279)	T	4.70E 02	9.40E-02	7.60E 02	5
17 A 020*	P	NITROBENZENE	T	4.70E 02	9.40E-02	7.60E 02	5
08 D 281*		DIMETHYL PHTHALATE	T	4.70E 02	9.40E-02	7.60E 02	5
08 D 283*		DI-N-BUTYL PHTHALATE	T	4.70E 02	9.40E-02	7.60E 02	5
47 A 080	P	HYDROGEN CYANIDE	T	4.70E 02	9.40E-02	7.60E 02	5
02 A 180*		DIBROMODICHLOROMETHANE	D	1.02E 03	9.33E-02	7.54E 02	
79 A 010	P	SILVER	T	1.30E 02	9.30E-02	7.50E 02	2
18 A 161*		6-ETHYL-M-CRESOL	S	9.20E-01	9.20E-02	7.43E 02	
18 A 162*		4-ETHYL-O-CRESOL	T	2.20E 03	9.20E-02	7.40E 02	6
18 A 163*		2-ETHYL-P-CRESOL	T	2.20E 03	9.20E-02	7.40E 02	6
18 A 160*		ETHYL CRESOLS	T	2.20E 03	9.20E-02	7.40E 02	6
02 A 320*	P	HEXACHLOROETHANE	T	2.20E 03	9.20E-02	7.40E 02	6
10 A 080*		1,2-DIAMINOETHANE	T	8.80E 02	8.80E-02	7.11E 02	1
07 B 080*	P	ISOPHORONE	T	2.20E 03	8.80E-02	7.11E 02	6
08 A 040*		ACETIC ACID	T	2.20E 03	8.80E-02	7.11E 02	6
10 C 065*		3,4-XYLIDINE	T	2.20E 03	8.80E-02	7.11E 02	6
10 C 060*		DIMETHYLANILINES	T	2.20E 03	8.80E-02	7.11E 02	6
10 C 064*		2,6-XYLIDINE	T	2.20E 03	8.80E-02	7.11E 02	6
10 C 063*		2,5-XYLIDINE	T	2.20E 03	8.80E-02	7.11E 02	6
10 C 062*		2,4-XYLIDINE	T	2.20E 03	8.80E-02	7.11E 02	6
10 D 020*	W	N,N-DIMETHYLANILINE	T	2.20E 03	8.80E-02	7.11E 02	6
10 C 066*		3,5-XYLIDINE	T	2.20E 03	8.80E-02	7.11E 02	6
10 C 061*		2,3-XYLIDINE	T	2.20E 03	8.80E-02	7.11E 02	6
17 A 082*		3,4-DINITROTOLUENE	T	2.20E 03	8.80E-02	7.11E 02	6
17 A 084*	P	2,4-DINITROTOLUENE	T	1.30E 02	8.70E-02	7.00E 02	4
17 A 081*	P	2,6-DINITROTOLUENE	T	1.30E 02	8.70E-02	7.00E 02	4
17 A 083*		2,3-DINITROTOLUENE	T	1.30E 02	8.70E-02	7.00E 02	4
17 A 086*		3,5-DINITROTOLUENE	T	1.30E 02	8.70E-02	7.00E 02	4
17 A 085*		2,5-DINITROTOLUENE	T	1.30E 02	8.70E-02	7.00E 02	4
17 A 080*		DINITROTOLUENES	T	1.30E 02	8.70E-02	7.00E 02	4

TEST BURNER FLUE GAS COMPOSITE, HEALTH IMPACT

DMEG NO.				COMPOUND NAME	TYPE	CONC E-6 G/SCM	DS	WDS G/S	LCCAT
21 A 180*	P	W		PHENANTHRENE	T	1.30E 02	8.12E-02	6.60E 02	2
22 D 020*	P	W		INDENO(1,2,3-CD)PYRENE	T	1.30E 02	8.12E-02	6.60E 02	2
22 C 020*	P			BENZO(K)FLUORANTHENE	T	1.30E 02	8.12E-02	6.60E 02	2
08 A 101*				CAPROIC ACID	T	4.70E 02	8.10E-02	6.54E 02	5
08 A 102*				CAPRYLIC ACID	T	4.70E 02	8.10E-02	6.54E 02	5
08 A 100*				SATURATED LONG CHAIN ACIDS (MW:116-201)	T	4.70E 02	8.10E-02	6.54E 02	5
08 A 103*				CAPRIC ACID	T	4.70E 02	8.10E-02	6.54E 02	5
08 A 104*				LAURIC ACID	T	4.70E 02	8.10E-02	6.54E 02	5
02 B 100*	P			DICHLOROPROPENES	T	8.80E 02	8.00E-02	6.50E 02	1
02 B 104*				TRANS-1,3-DICHLOROPROPENE	T	8.80E 02	8.00E-02	6.50E 02	1
02 B 103*				CIS-1,3-DICHLOROPROPENE	T	8.80E 02	8.00E-02	6.50E 02	1
23 A 101*				2-CHLOROPYRIDINE	T	4.70E 02	8.00E-02	6.43E 02	5
23 A 102*				3-CHLOROPYRIDINE	T	4.70E 02	8.00E-02	6.43E 02	5
23 A 100*		W		CHLOROPYRIDINES	T	4.70E 02	8.00E-02	6.43E 02	5
23 A 103*				4-CHLOROPYRIDINE	T	4.70E 02	8.00E-02	6.43E 02	5
23 C 180*				DIBENZO(A,G)CARBAZOLE	T	4.70E 02	7.83E-02	6.32E 02	5
10 A 060*				ETHANOLAMINE	T	4.70E 02	7.83E-02	6.32E 02	5
19 A 020*	P			2-CHLOROPHENOL	T	2.20E 03	7.33E-02	5.92E 02	6
08 C 020*				FORMAMIDE	T	2.20E 03	7.33E-02	5.92E 02	6
21 B 141*				4-METHYL CHRYSENE	T	1.30E 02	7.22E-02	5.83E 02	2
21 B 140*				METHYL CHRYSENES	T	1.30E 02	7.22E-02	5.83E 02	2
21 B 142*				5-METHYL CHRYSENE	T	1.30E 02	7.22E-02	5.83E 02	2
08 A 060*				MALEIC ACID	T	2.20E 03	6.90E-02	5.60E 02	6
18 A 060*				2-METHOXYPHENOL	T	2.20E 03	6.74E-02	5.50E 02	6
19 A 040*	P			2,4-DICHLOROPHENOL	T	4.70E 02	6.71E-02	5.42E 02	5
04 A 050*		W		EPICHLORHYDRIN	T	1.30E 02	6.50E-02	5.30E 02	4
04 A 060*		W		1-CHLORO-1,3-EPOXYPROPANE	T	1.30E 02	6.50E-02	5.30E 02	4
15 B 060*		W		4,4'-DIPHENYLBIPHENYL	T	1.30E 02	6.50E-02	5.30E 02	2
04 A 040*		W		2-CHLORO-1,2-EPOXYPROPANE	T	1.30E 02	6.50E-02	5.30E 02	4
27 A 010				LITHIUM	S	< 1.40E 00<	6.40E-02<	5.14E 02	
18 A 120*				2,2'-DIHYDROXYDIPHENYL	T	2.20E 03	6.30E-02	5.10E 02	6
10 A 122*				3-AMINO-1-PROPANOL	T	2.20E 03	6.11E-02	4.93E 02	6
10 A 120*				PROPANOLAMINES	T	2.20E 03	6.11E-02	4.93E 02	6
18 B 080*				1,2,3-TRIHYDROXYBENZENE	T	2.20E 03	6.11E-02	4.93E 02	6

TEST BURNER FLUE GAS COMPOSITE, HEALTH IMPACT

DMEG NO.			COMPOUND NAME	TYPE	CONC E-6 G/SCM	DS	WDS G/S	LCCAT
08 B 080*			Y-BUTYROLACTONE	T	2.20E 03	6.11E-02	4.93E 02	6
10 A 121*			2-AMINO-1-PROPANOL	T	2.20E 03	6.11E-02	4.93E 02	6
10 A 123*			1-AMINO-2-PROPANOL	T	2.20E 03	6.11E-02	4.93E 02	6
21 B 120*	P		CHRYSENE	T	1.30E 02	5.90E-02	4.80E 02	2
12 A 080*			N-NITROSODIISOPROPYLAMINE	T	2.20E 03	5.80E-02	4.70E 02	6
08 B 041*			2-HYDROXYBENZOIC ACID	T	2.20E 03	5.50E-02	4.44E 02	6
10 A 160*			CYCLOHEXYLAMINE	T	2.20E 03	5.50E-02	4.44E 02	6
07 B 120*			ACETOPHENONE	T	2.20E 03	5.40E-02	4.33E 02	6
21 C 160*			PICENE	T	1.30E 02	5.20E-02	4.20E 02	2
22 C 080*	P	W	BENZO(B)FLUORANTHENE	T	4.40E 01	4.90E-02	4.00E 02	3
18 B 040*			1,3-DIHYDROXYBENZENE	T	2.20E 03	4.90E-02	4.00E 02	6
05 C 040*		W	T-PENTANOL	T	2.20E 03	4.90E-02	4.00E 02	6
34 A 010			CALCIUM (AS CA+2)	S	> 7.80E 02>	4.90E-02>	3.93E 02	
23 C 020*			PYRROLE	T	1.30E 02	4.81E-02	3.90E 02	4
18 A 083*			P-ETHYLPHENOL	T	4.70E 02	4.70E-02	3.80E 02	5
18 A 041*			M-CRESOL	T	4.70E 02	4.70E-02	3.80E 02	5
18 A 042*			O-CRESOL	T	4.70E 02	4.70E-02	3.80E 02	5
18 A 080*		W	ETHYLPHENOLS	T	4.70E 02	4.70E-02	3.80E 02	5
18 A 040*		W	CRESOLS	T	4.70E 02	4.70E-02	3.80E 02	5
18 A 082*			M-ETHYLPHENOL	T	4.70E 02	4.70E-02	3.80E 02	5
18 A 081*			O-ETHYLPHENOL	T	4.70E 02	4.70E-02	3.80E 02	5
18 A 043*			P-CRESOL	T	4.70E 02	4.70E-02	3.80E 02	5
06 A 020*		W	ETHYLENE GLYCOL	T	4.70E 02	4.70E-02	3.80E 02	5
78 A 010	P		COPPER	S	9.30E 00	4.70E-02	3.80E 02	
15 A 160*		W	BIPHENYL	T	4.40E 01	4.40E-02	3.60E 02	3
09 A 120*		W	TETRAMETHYLSUCCINONITRILE	T	1.30E 02	4.33E-02	3.50E 02	4
21 C 120*			BENZO(E)PYRENE	T	1.30E 02	4.33E-02	3.50E 02	2
23 B 200*			BENZ(C)ACRIDINE	T	4.70E 02	4.30E-02	3.50E 02	5
23 C 040*			INDOLE	T	4.70E 02	4.30E-02	3.50E 02	5
04 B 100*			2,2'-DICHLORODIISOPROPYL ETHER	T	4.70E 02	4.30E-02	3.50E 02	5
04 A 140*	P		2-CHLOROETHYL VINYL ETHER	T	4.70E 02	4.30E-02	3.50E 02	5
23 B 061			2,3-DIMETHYLQUINOLINE	T	2.20E 03	4.00E-02	3.23E 02	6
23 B 063			2,8-DIMETHYLQUINOLINE	T	2.20E 03	4.00E-02	3.23E 02	6
05 A 140		W	BENZYL ALCOHOL	T	2.20E 03	4.00E-02	3.23E 02	6

TEST BURNER FLUE GAS COMPOSITE, HEALTH IMPACT

DMEG NO.			COMPOUND NAME	TYPE	CONC E-6 G/SCM	DS	WDS G/S	LCCAT
23 B 064			3,4-DIMETHYLQUINOLINE	T	2.20E 03	4.00E-02	3.23E 02	6
23 B 066			1,3-DIMETHYLISOQUINOLINE	T	2.20E 03	4.00E-02	3.23E 02	6
23 B 067			1,5-DIMETHYLISOQUINOLINE	T	2.20E 03	4.00E-02	3.23E 02	6
23 B 060			DIMETHYLQUINOLINES	T	2.20E 03	4.00E-02	3.23E 02	6
56 A 010			FLUORINE (AS F-)	S	1.00E 02	4.00E-02	3.23E 02	
23 B 065			6,8-DIMETHYLQUINOLINE	T	2.20E 03	4.00E-02	3.23E 02	6
21 D 060*			DIBENZO(A,L)PYRENE	T	4.40E 01	4.00E-02	3.23E 02	3
23 B 062			2,6-DIMETHYLQUINOLINE	T	2.20E 03	4.00E-02	3.23E 02	6
23 B 040			2-METHYLQUINOLINE	T	2.20E 03	4.00E-02	3.23E 02	6
08 A 080*			VALERIC ACID	T	9.10E 02	4.00E-02	3.20E 02	7
23 C 140*			DIBENZO(A,I)CARBAZOLE	T	4.70E 02	3.91E-02	3.20E 02	5
07 B 100*		W	CAMPHOR	T	4.70E 02	3.91E-02	3.20E 02	5
20 A 020*	P		2-NITROPHENOL	T	2.20E 03	3.80E-02	3.10E 02	6
18 A 182			4,6-DI-TERT-BUTYL-M-CRESOL	T	2.20E 03	3.72E-02	3.01E 02	6
18 A 183			2,6-DIMETHYL-4-HEPTYL PHENOL	T	2.20E 03	3.72E-02	3.01E 02	6
18 A 181			2,4,6-TRIMETHYL METHYL PHENOL	T	2.20E 03	3.72E-02	3.01E 02	6
18 A 180			POLYALKYLPHENOLS (MW>135)	T	2.20E 03	3.72E-02	3.01E 02	6
08 A 040*			ACETIC ACID	T	9.10E 02	3.64E-02	2.94E 02	7
18 A 140*			XYLENOLS	T	4.70E 02	3.61E-02	2.92E 02	5
18 A 141*			2,3-XYLENOL	T	4.70E 02	3.61E-02	2.92E 02	5
18 A 146*			3,4-XYLENOL	T	4.70E 02	3.61E-02	2.92E 02	5
18 A 144*			2,6-XYLENOL	T	4.70E 02	3.61E-02	2.92E 02	5
18 A 145*			3,5-XYLENOL	T	4.70E 02	3.61E-02	2.92E 02	5
18 A 143*			2,5-XYLENOL	T	4.70E 02	3.61E-02	2.92E 02	5
18 A 142*	P		2,4-XYLENOL	T	4.70E 02	3.61E-02	2.92E 02	5
03 B 020*		W	1,4-DIOXANE	T	1.30E 02	3.61E-02	2.91E 02	4
03 B 040*		W	1,3-DIOXANE	T	1.30E 02	3.61E-02	2.91E 02	4
08 D 160			METHYL BENZOATE	T	2.20E 03	3.60E-02	2.91E 02	6
21 D 020*			DIBENZO(A,H)PYRENE	T	1.30E 02	3.51E-02	2.83E 02	2
08 D 080*			METHYL METHACRYLATE	T	4.70E 02	3.40E-02	2.71E 02	5
23 A 081			2-PHENYLPYRIDINE	T	2.20E 03	3.20E-02	2.60E 02	6
23 A 064			4-N-PROPYLPYRIDINE	T	2.20E 03	3.20E-02	2.60E 02	6
23 A 122			2,4,6-COLLIDINE	T	2.20E 03	3.20E-02	2.60E 02	6
23 A 062			3-ETHYLPYRIDINE	T	2.20E 03	3.20E-02	2.60E 02	6

TEST BURNER FLUE GAS COMPOSITE, HEALTH IMPACT

DMEG NO.		COMPOUND NAME	TYPE	CONC E-6 G/SCM	DS	WDS G/S	LCCAT
23 A 082		3-PHENYLPYRIDINE	T	2.20E 03	3.20E-02	2.60E 02	6
23 A 063		4-ETHYLPYRIDINE	T	2.20E 03	3.20E-02	2.60E 02	6
23 A 121		5-ETHYL-2-METHYLPYRIDINE	T	2.20E 03	3.20E-02	2.60E 02	6
23 A 060		MONOSUBSTITUTED ALKYL PYRIDINES	T	2.20E 03	3.20E-02	2.60E 02	6
23 A 061		2-ETHYLPYRIDINE	T	2.20E 03	3.20E-02	2.60E 02	6
23 A 083		4-PHENYLPYRIDINE	T	2.20E 03	3.20E-02	2.60E 02	6
23 A 120		COLLIDINES	T	2.20E 03	3.20E-02	2.60E 02	6
23 A 080		PHENYLPYRIDINES	T	2.20E 03	3.20E-02	2.60E 02	6
02 B 120*	P	HEXACHLOROBUTADIENE	T	1.30E 02	3.20E-02	2.60E 02	2
10 B 100		MORPHOLINE	T	2.20E 03	3.14E-02	2.53E 02	6
23 A 020*		PYRIDINE	T	4.70E 02	3.13E-02	2.53E 02	5
08 D 200		DIETHYL ADIPATE	T	2.20E 03	3.10E-02	2.50E 02	6
07 B 181		CARVONE(D OR L)	T	2.20E 03	3.00E-02	2.40E 02	6
07 B 182		DIHYDRO-(D OR L)CARVONE	T	2.20E 03	3.00E-02	2.40E 02	6
07 B 180		CARVONES	T	2.20E 03	3.00E-02	2.40E 02	6
23 B 020*		QUINOLINES	T	4.70E 02	2.93E-02	2.40E 02	5
23 B 021*		QUINOLINE	T	4.70E 02	2.93E-02	2.40E 02	5
20 A 060*	P	4-NITROPHENOL	T	4.70E 02	2.93E-02	2.40E 02	5
23 B 022*		ISOQUINOLINE	T	4.70E 02	2.93E-02	2.40E 02	5
01 B 220	W	DICYCLOPENTADIENE	T	8.80E 02	2.93E-02	2.40E 02	1
43 A 010		SILICON	S	> 2.90E 02>	2.90E-02>	2.34E 02	
08 A 060*		MALEIC ACID	T	9.10E 02	2.84E-02	2.30E 02	7
12 A 100		N-NITROSODIPENTYLAMINE	T	2.20E 03	2.80E-02	2.30E 02	6
22 C 020*	P	BENZO(K)FLUORANTHENE	T	4.40E 01	2.80E-02	2.22E 02	3
21 A 180*	P W	PHENANTHRENE	T	4.40E 01	2.80E-02	2.22E 02	3
22 D 020*	P W	INDENO(1,2,3-CD)PYRENE	T	4.40E 01	2.80E-02	2.22E 02	3
05 A 160		PHENETHYL ALCOHOL	T	2.20E 03	2.71E-02	2.20E 02	6
23 A 143*		2,5-DIMETHYLPYRIDINE	T	4.70E 02	2.61E-02	2.10E 02	5
23 A 146*		2,3,4,6-TETRAMETHYL PYRIDINE	T	4.70E 02	2.61E-02	2.10E 02	5
23 A 142*		2,4-DIMETHYLPYRIDINE	T	4.70E 02	2.61E-02	2.10E 02	5
23 A 141*		2,3-DIMETHYLPYRIDINE	T	4.70E 02	2.61E-02	2.10E 02	5
23 A 140*		DISUBSTITUTED POLYSUBSTITUTED ALKYL PYRIDINES	T	4.70E 02	2.61E-02	2.10E 02	5
23 A 144*		2,6-DIMETHYLPYRIDINE	T	4.70E 02	2.61E-02	2.10E 02	5
05 B 100*	W	1-PHENYLETHANOL	T	4.70E 02	2.61E-02	2.10E 02	5

TEST BURNER FLUE GAS COMPOSITE, HEALTH IMPACT

OMEG NO.			COMPOUND NAME	TYPE	CONC E-6 G/SCM	DS	WDS G/S	LCCAT
23 A 145*			3,4-DIMETHYLPYRIDINE	T	4.70E 02	2.61E-02	2.10E 02	5
17 A 020*	P		NITROBENZENE	T	1.30E 02	2.60E-02	2.10E 02	4
02 A 160*	P		BROMOFORM	T	1.30E 02	2.60E-02	2.10E 02	2
16 B 020		W	A-CHLOROTOLUENE	T	1.30E 02	2.60E-02	2.10E 02	2
08 B 080*			Y-BUTYROLACTONE	T	9.10E 02	2.52E-02	2.04E 02	7
26 A 020		W	TRIETHYL PHOSPHATE	T	9.10E 02	2.52E-02	2.04E 02	7
18 A 020*	P		PHENOL	T	4.70E 02	2.50E-02	2.00E 02	5
10 C 020*			ANILINE	T	4.70E 02	2.50E-02	2.00E 02	5
23 C 120			BENZO(A)CARBAZOLE	T	4.70E 02	2.50E-02	2.00E 02	5
21 B 142*			5-METHYL CHRYSENE	T	4.40E 01	2.44E-02	2.00E 02	3
23 B 140			BENZO(F)QUINOLINE	T	2.20E 03	2.44E-02	2.00E 02	6
23 B 160			BENZO(H)QUINOLINE	T	2.20E 03	2.44E-02	2.00E 02	6
21 B 140*			METHYL CHRYSENES	T	4.40E 01	2.44E-02	2.00E 02	3
23 B 120			PHENANTHRIDINE	T	2.20E 03	2.44E-02	2.00E 02	6
13 B 080			METHYL DISULFIDE	T	2.20E 03	2.44E-02	2.00E 02	6
21 B 141*			4-METHYL CHRYSENE	T	4.40E 01	2.44E-02	2.00E 02	3
05 B 120			BORNEOL	T	2.20E 03	2.44E-02	2.00E 02	6
23 B 080			ACRIDINE	T	2.20E 03	2.44E-02	2.00E 02	6
18 B 020*			CATECHOL	T	4.70E 02	2.40E-02	1.90E 02	5
20 A 040*			3-NITROPHENOL	T	4.70E 02	2.40E-02	1.90E 02	5
13 B 060			DIPHENYL SULFIDE	T	2.20E 03	2.30E-02	1.90E 02	6
08 B 041*			2-HYDROXYBENZOIC ACID	T	9.10E 02	2.30E-02	1.83E 02	7
14 A 020		W	BENZENESULFONIC ACID	T	9.10E 02	2.30E-02	1.83E 02	7
23 A 103*			4-CHLOROPYRIDINE	T	1.30E 02	2.20E-02	1.80E 02	4
23 A 102*			3-CHLOROPYRIDINE	T	1.30E 02	2.20E-02	1.80E 02	4
23 A 100*		W	CHLOROPYRIDINES	T	1.30E 02	2.20E-02	1.80E 02	4
23 A 101*			2-CHLOROPYRIDINE	T	1.30E 02	2.20E-02	1.80E 02	4
50 A 010	P		ANTIMONY	D	< 1.10E 01<	2.20E-02<	1.80E 02	
15 B 060*		W	4,4'-DIPHENYLBIPHENYL	T	4.40E 01	2.20E-02	1.80E 02	3
23 C 180*			DIBENZO(A,G)CARBAZOLE	T	1.30E 02	2.20E-02	1.80E 02	4
33 A 010			MAGNESIUM	S	> 1.30E 02>	2.20E-02>	1.80E 02	
09 A 100			1,3-DICYANO-1-HYDROXYBUTANE	T	4.70E 02	2.13E-02	1.72E 02	5
25 A 042			3-METHYLTHIOPHENE	T	4.70E 02	2.04E-02	1.70E 02	5
08 A 080*			VALERIC ACID	T	4.70E 02	2.04E-02	1.70E 02	5

TEST BURNER FLUE GAS COMPOSITE, HEALTH IMPACT

DMEG NO.		COMPOUND NAME	TYPE	CONC E-6 G/SCM	DS	WDS G/S	LCCAT
19 B 023*		CHLORINATED-P-CRESOLS	T	4.70E 02	2.04E-02	1.70E 02	5
18 A 100*		PHENYLPHENOLS	T	4.70E 02	2.04E-02	1.70E 02	5
25 B 040	W	BENZO(B)THIOPHENE	T	4.70E 02	2.04E-02	1.70E 02	5
18 A 103*		M-PHENYLPHENOL	T	4.70E 02	2.04E-02	1.70E 02	5
23 B 260*		DIBENZ(C,H)ACRIDINE	T	4.70E 02	2.04E-02	1.70E 02	5
19 B 021*		CHLORINATED-O-CRESOLS	T	4.70E 02	2.04E-02	1.70E 02	5
23 C 101		3-METHYLCARBAZOLE	T	4.70E 02	2.04E-02	1.70E 02	5
19 B 022*	P	CHLORINATED-M-CRESOLS	T	4.70E 02	2.04E-02	1.70E 02	5
23 C 080		CARBAZOLE	T	4.70E 02	2.04E-02	1.70E 02	5
18 A 102*		P-PHENYLPHENOL	T	4.70E 02	2.04E-02	1.70E 02	5
09 A 080		BUTYRONITRILE	T	4.70E 02	2.04E-02	1.70E 02	5
25 A 040		METHYLTHIOPHENES	T	4.70E 02	2.04E-02	1.70E 02	5
25 A 041		2-METHYLTHIOPHENE	T	4.70E 02	2.04E-02	1.70E 02	5
23 C 102		9-METHYLCARBAZOLE	T	4.70E 02	2.04E-02	1.70E 02	5
19 B 020*	W	CHLORINATED CRESOLS	T	4.70E 02	2.04E-02	1.70E 02	5
18 A 101*		O-PHENYLPHENOL	T	4.70E 02	2.04E-02	1.70E 02	5
23 C 100		METHYLCARBAZOLES	T	4.70E 02	2.04E-02	1.70E 02	5
18 C 040	W	2-NAPHTHOL	T	4.70E 02	2.04E-02	1.70E 02	5
21 B 120*	P	CHRYSENE	T	2.20E 03	2.00E-02	1.61E 02	6
22 C 040		BENZO(J)FLUORANTHENE	T	4.40E 01	2.00E-02	1.61E 02	3
82 A 010	P	CADMIUM	T	1.30E 02	2.00E-02	1.61E 02	2
18 A 162*		4-ETHYL-O-CRESOL	S	> 2.00E-01>	2.00E-02>	1.61E 02	
18 A 163*		2-ETHYL-P-CRESOL	T	4.70E 02	2.00E-02	1.60E 02	5
18 A 160*		ETHYL CRESOLS	T	4.70E 02	2.00E-02	1.60E 02	5
18 A 161*		6-ETHYL-M-CRESOL	T	4.70E 02	2.00E-02	1.60E 02	5
02 A 140*	P	DIBROMOCHLOROMETHANE	T	4.70E 02	2.00E-02	1.60E 02	5
16 B 040		BIS(CHLOROMETHYL)BENZENES	T	8.80E 02	2.00E-02	1.60E 02	1
16 B 043		1,4-BIS(CHLOROMETHYL)BENZENE	T	1.30E 02	1.90E-02	1.52E 02	2
16 B 041		1,2-BIS(CHLOROMETHYBENZENE	T	1.30E 02	1.90E-02	1.52E 02	2
16 B 042		1,3-BIS(CHLOROMETHYL)BENZENE	T	1.30E 02	1.90E-02	1.52E 02	2
07 B 080*	P	ISOPHORONE	T	1.30E 02	1.90E-02	1.52E 02	2
10 A 080*		1,2-DIAMINOETHANE	T	4.70E 02	1.90E-02	1.51E 02	5
10 C 062*		2,4-XYLIDINE	T	4.70E 02	1.90E-02	1.51E 02	5
10 C 064*		2,6-XYLIDINE	T	4.70E 02	1.90E-02	1.51E 02	5
			T	4.70E 02	1.90E-02	1.51E 02	5

TEST BURNER FLUE GAS COMPOSITE, HEALTH IMPACT

DMEG NO.		COMPOUND NAME	TYPE	CONC E-6 G/SCM	DS	WDS G/S	LCCAT
10 C 065*		3,4-XYLIDINE	T	4.70E 02	1.90E-02	1.51E 02	5
10 C 061*		2,3-XYLIDINE	T	4.70E 02	1.90E-02	1.51E 02	5
08 A 040*		ACETIC ACID	T	4.70E 02	1.90E-02	1.51E 02	5
10 C 066*		3,5-XYLIDINE	T	4.70E 02	1.90E-02	1.51E 02	5
10 C 060*		DIMETHYLANILINES	T	4.70E 02	1.90E-02	1.51E 02	5
10 C 063*		2,5-XYLIDINE	T	4.70E 02	1.90E-02	1.51E 02	5
10 D 020*	W	N,N-DIMETHYLANILINE	T	4.70E 02	1.90E-02	1.51E 02	5
18 C 020		1-NAPHTHOL	T	2.20E 03	1.83E-02	1.50E 02	6
25 A 061		2,3-DIMETHYLTHIOPHENE	T	4.70E 02	1.80E-02	1.50E 02	5
25 A 060		DIMETHYLTHIOPHENES	T	4.70E 02	1.80E-02	1.50E 02	5
25 A 064		3,4-DIMETHYLTHIOPHENE	T	4.70E 02	1.80E-02	1.50E 02	5
25 A 062		2,4-DIMETHYLTHIOPHENE	T	4.70E 02	1.80E-02	1.50E 02	5
25 A 063		2,5-DIMETHYLTHIOPHENE	T	4.70E 02	1.80E-02	1.50E 02	5
21 C 160*		PICENE	T	4.40E 01	1.80E-02	1.42E 02	3
04 A 200		4-BROMOPHENYL PHENYL ETHER	T	4.70E 02	1.74E-02	1.40E 02	5
04 A 180*	P	CHLOROPHENYL PHENYL ETHER	T	4.70E 02	1.74E-02	1.40E 02	5
25 A 081		2,3,5-TRIMETHYLTHIOPHENE	T	4.70E 02	1.62E-02	1.30E 02	5
25 A 080		TRIMETHYL AND TETRAMETHYL THIOPHENES	T	4.70E 02	1.62E-02	1.30E 02	5
08 D 320*	P	BUTYL BENZYL PHTHALATE	T	2.20E 03	1.60E-02	1.30E 02	6
08 A 160		BENZOIC ACID	T	2.20E 03	1.60E-02	1.30E 02	6
02 A 360		BROMOBUTANES	T	8.80E 02	1.60E-02	1.30E 02	1
02 A 361		1-BROMOBUTANE	T	8.80E 02	1.60E-02	1.30E 02	1
17 A 043		4-NITROTOLUENE	T	4.70E 02	1.60E-02	1.30E 02	5
17 A 040		NITROTOLUENES	T	4.70E 02	1.60E-02	1.30E 02	5
04 B 040*	P	1,1'-DICHLORODIETHYL ETHER	T	4.70E 02	1.60E-02	1.30E 02	5
17 A 042		3-NITROTOLUENE	T	4.70E 02	1.60E-02	1.30E 02	5
17 A 041		2-NITROTOLUENE	T	4.70E 02	1.60E-02	1.30E 02	5
04 B 080		2,2'-DICHLORODIETHYL ETHER	T	4.70E 02	1.60E-02	1.30E 02	5
19 A 020*	P	2-CHLOROPHENOL	T	4.70E 02	1.60E-02	1.30E 02	5
08 C 020*		FORMAMIDE	T	4.70E 02	1.60E-02	1.30E 02	5
09 B 042		B-NAPHTHONITRILES	T	4.70E 02	1.50E-02	1.20E 02	5
09 B 020	W	BENZONITRILE	T	4.70E 02	1.50E-02	1.20E 02	5
08 A 060*		MALEIC ACID	T	4.70E 02	1.50E-02	1.20E 02	5
09 B 040	W	NAPHTHONITRILES	T	4.70E 02	1.50E-02	1.20E 02	5

TEST BURNER FLUE GAS COMPOSITE, HEALTH IMPACT

DMEG NO.		COMPOUND NAME	TYPE	CONC E-6 G/SCM	DS	MDS G/S	LCCAT
09 B 041		A-NAPHTHONITRILES	T	4.70E 02	1.50E-02	1.20E 02	5
21 C 120*		BENZO(E)PYRENE	T	4.40E 01	1.50E-02	1.20E 02	5
18 C 083		5-INDANOL	T	2.20E 03	1.50E-02	1.20E 02	6
05 A 080		N-BUTANOL	T	2.20E 03	1.50E-02	1.20E 02	6
05 A 100		ISOBUTYL ALCOHOL	T	2.20E 03	1.50E-02	1.20E 02	6
18 C 081		1-INDANOL	T	2.20E 03	1.50E-02	1.20E 02	6
18 C 082		4-INDANOL	T	2.20E 03	1.50E-02	1.20E 02	6
18 C 080		INDANOLS	T	2.20E 03	1.50E-02	1.20E 02	6
15 B 163		P-TERPHENYL	T	1.30E 02	1.44E-02	1.20E 02	2
15 B 161		O-TERPHENYL	T	1.30E 02	1.44E-02	1.20E 02	2
15 B 162		M-TERPHENYL	T	1.30E 02	1.44E-02	1.20E 02	2
15 B 160		TERPHENYLS	T	4.70E 02	1.44E-02	1.20E 02	5
18 A 060*		2-METHOXYPHENOL	T	2.20E 03	1.40E-02	1.11E 02	6
08 A 180		ADIPIC ACID	T	2.20E 03	1.40E-02	1.11E 02	6
05 B 080		2,6-DIMETHYL-4-HEPTANOL	T	4.70E 02	1.34E-02	1.10E 02	5
18 A 120*		2,2'-DIHYDROXYDIPHENYL	T	1.30E 02	1.31E-02	1.10E 02	2
21 C 060		DIBENZ(A,C)ANTHRACENE	T	4.70E 02	1.30E-02	1.10E 02	5
10 A 122*		3-AMINO-1-PROPANOL	T	4.70E 02	1.30E-02	1.10E 02	5
18 B 080*		1,2,3-TRIHYDROXYBENZENE	T	4.70E 02	1.30E-02	1.10E 02	5
08 B 080*		Y-BUTYROLACTONE	T	4.70E 02	1.30E-02	1.10E 02	5
10 A 120*		PROPANOLAMINES	T	4.70E 02	1.30E-02	1.10E 02	5
10 A 121*		2-AMINO-1-PROPANOL	T	4.70E 02	1.30E-02	1.10E 02	5
10 A 123*		1-AMINO-2-PROPANOL	T	4.70E 02	1.30E-02	1.10E 02	5
02 A 320*	P	HEXACHLOROETHANE	T	1.30E 02	1.30E-02	1.10E 02	2
12 A 080*		N-NITROSODIISOPROPYLAMINE	T	4.70E 02	1.23E-02	1.00E 02	5
21 D 020*		DIBENZO(A,H)PYRENE	T	4.40E 01	1.20E-02	9.60E 01	3
23 C 040*		INDOLE	T	1.30E 02	1.20E-02	9.54E 01	4
02 B 103*		CIS-1,3-DICHLOROPROPENE	T	1.30E 02	1.20E-02	9.54E 01	2
02 B 104*		TRANS-1,3-DICHLOROPROPENE	T	1.30E 02	1.20E-02	9.54E 01	2
04 A 140*	P	2-CHLOROETHYL VINYL ETHER	T	1.30E 02	1.20E-02	9.54E 01	4
02 B 100*	P	DICHLOROPROPENES	T	1.30E 02	1.20E-02	9.54E 01	2
04 B 100*		2,2'-DICHLORODIISOPROPYL ETHER	T	1.30E 02	1.20E-02	9.54E 01	4
10 A 160*		CYCLOHEXYLAMINE	T	4.70E 02	1.20E-02	9.50E 01	5
08 B 041*		2-HYDROXYBENZOIC ACID	T	4.70E 02	1.20E-02	9.50E 01	5

TEST BURNER FLUE GAS COMPOSITE, HEALTH IMPACT

DMEG NO.				COMPOUND NAME	TYPE	CONC E-6 G/SCM		US		WDS G/S		LCCAT
05 C 060				A-TERPINEOL	T	2.20E	03	1.20E-02		9.40E	01	6
07 B 120*				ACETOPHENONE	T	4.70E	02	1.14E-02		9.30E	01	5
23 C 140*				DIBENZO(A,I)CARBAZOLE	T	1.30E	02	1.10E-02		8.60E	01	4
16 A 161				1,2,4-TRICHLOROBENZENE	T	1.30E	02	1.10E-02		8.80E	01	2
16 A 162				HEXACHLOROBENZENE	T	1.30E	02	1.10E-02		8.80E	01	2
16 A 160*	P			POLYCHLORINATED BENZENES	T	1.30E	02	1.10E-02		8.80E	01	2
05 C 040*		W		T-PENTANOL	T	4.70E	02	1.04E-02		8.43E	01	5
18 B 040*				1,3-DIHYDROXYBENZENE	T	4.70E	02	1.04E-02		8.43E	01	5
23 C 060				METHYLINDOLES	T	4.70E	02	1.04E-02		8.43E	01	5
23 C 061				2-METHYLINDOLE	T	4.70E	02	1.04E-02		8.43E	01	5
20 A 020*	P			2-NITROPHENOL	T	4.70E	02	8.10E-03		6.54E	01	5
65 A 010				VANADIUM	S	3.60E	00	7.20E-03		5.81E	01	
04 A 180*	P			CHLOROPHENYL PHENYL ETHER	T	1.30E	02	4.81E-03		3.90E	01	4
85 A 010				URANIUM	S	< 4.00E	-02<	4.44E-03	<	3.60E	01	
04 B 040*	P			1,1'-DICHLORODIETHYL ETHER	T	1.30E	02	4.33E-03		3.50E	01	4
16 A 160*	P			POLYCHLORINATED BENZENES	T	4.40E	01	3.70E-03		3.00E	01	3
69 A 010				MOLYBDENUM	S	1.80E	01	3.60E-03		2.90E	01	
62 A 010				TITANIUM	S	2.10E	01	3.50E-03		2.82E	01	
71 A 010	P			MANGANESE	S	1.70E	01	3.40E-03		2.74E	01	
08 D 320*	P			BUTYL BENZYL PHTHALATE	T	4.70E	02	3.40E-03		2.71E	01	5
81 A 010	P			ZINC	S	1.30E	01	3.30E-03		2.62E	01	
38 A 010				ALUMINUM	S	1.60E	01	3.10E-03		2.50E	01	
02 A 140*	P			DIBROMOCHLOROMETHANE	T	1.30E	02	2.90E-03		2.33E	01	2
28 A 010				SODIUM	S	> 1.40E	02>	2.64E-03	>	2.13E	01	
21 A 020*	P			NAPHTHALENE	T	1.30E	02	2.60E-03		2.10E	01	2
02 A 340*	P			DICHLOROPROPANES	T	8.80E	02	2.51E-03		2.03E	01	1
63 A 010				ZIRCONIUM (AS ZR+4)	S	1.20E	01	2.40E-03		1.93E	01	
21 A 140*	P			ANTHRACENE	T	1.30E	02	2.32E-03		1.90E	01	2
16 A 200*	P			CHLORONAPHTHALENES	T	1.30E	02	1.90E-03		1.52E	01	2
35 A 010				STRONTIUM	S	5.50E	00	1.80E-03		1.43E	01	
22 B 040*	P	W		FLUORANTHENE	T	1.30E	02	1.44E-03		1.20E	01	2
02 B 080*	P			TETRACHLOROETHENE	T	8.80E	02	1.31E-03		1.10E	01	1
37 A 010				BORON	S	4.00E	00	1.30E-03		1.04E	01	
21 A 020*	P			NAPHTHALENE	T	4.40E	01	8.80E-04		7.11E	00	3

TEST BURNER FLUE GAS COMPOSITE, HEALTH IMPACT

DMEG NO.	COMPOUND NAME	TYPE	CONC E-6 G/SCM	DS	WDS G/S	LCCAT
21 A 140* P	ANTHRACENE	T	4.40E 01	7.90E-04	6.34E 00	3
16 A 200* P	CHLORONAPHTHALENES	T	4.40E 01	6.40E-04	5.20E 00	3
21 B 180* P	PYRENE	T	1.30E 02	5.70E-04	4.60E 00	2
47 A 060 P	AMMONIA	D	< 1.00E 01<	5.60E-04<	4.50E 00	
22 B 040* P W	FLUORANTHENE	T	4.40E 01	4.90E-04	4.00E 00	3
16 A 120* P	1,3-DICHLOROBENZENE	T	1.30E 02	4.33E-04	3.50E 00	2
16 A 100* P	1,2-DICHLOROBENZENE	T	1.30E 02	4.33E-04	3.50E 00	2
16 A 020* P	CHLOROBENZENE	T	1.30E 02	3.71E-04	3.00E 00	2
02 A 340* P	DICHLOROPROPANES	T	1.30E 02	3.71E-04	3.00E 00	2
44 A 010	GERMANIUM	S	2.00E-01	3.60E-04	2.90E 00	
15 A 040* P	TOLUENE	T	1.30E 02	3.42E-04	2.80E 00	2
15 A 060* P	ETHYL BENZENE	T	1.30E 02	3.00E-04	2.40E 00	2
16 A 140* P	1,4-DICHLOROBENZENE	T	1.30E 02	2.90E-04	2.33E 00	2
39 A 010	GALLIUM	S	< 1.30E 00<	2.60E-04<	2.10E 00	
02 B 080* P	TETRACHLOROETHENE	T	1.30E 02	1.94E-04	1.60E 00	2
21 B 180* P	PYRENE	T	4.40E 01	1.91E-04	1.54E 00	3
16 A 120* P	1,3-DICHLOROBENZENE	T	4.40E 01	1.50E-04	1.20E 00	3
16 A 100* P	1,2-DICHLOROBENZENE	T	4.40E 01	1.50E-04	1.20E 00	3
16 A 020* P	CHLOROBENZENE	T	4.40E 01	1.30E-04	1.01E 00	3
15 A 040* P	TOLUENE	T	4.40E 01	1.20E-04	9.40E-01	3
15 A 060* P	ETHYL BENZENE	T	4.40E 01	1.00E-04	8.10E-01	3
16 A 140* P	1,4-DICHLOROBENZENE	T	4.40E 01	9.80E-05	7.90E-01	3
61 A 010	YTTRIUM (AS Y+3)	S	< 2.00E-02<	2.00E-05<	1.61E-01	
84 B 010	CERIUM	S	6.20E-01	1.70E-05	1.40E-01	
31 A 010	CESIUM	S	1.10E 00	1.34E-05	1.10E-01	
66 A 010	NIOBIUM (AS NB+3)	S	> 1.00E-01>	4.54E-06>	3.70E-02	
30 A 010	RUBIDIUM (AS RB+)	S	< 3.50E-01<	2.91E-06<	2.40E-02	
60 A 010	SCANDIUM	S	< 5.00E-02<	9.43E-07<	7.62E-03	
84 C 010	PRASEODYMIUM	S	1.30E-02	2.54E-07	2.10E-03	
57 A 010	CHLORINE (AS CL-)	S	3.30E 01	0.00E-01	0.00E-01	
01 A 020	METHANE	D	0.00E-01	0.00E-01	0.00E-01	
21 B 060 W	7,12-DIMETHYLBENZ(A)ANTHRACENE	D	0.00E-01	0.00E-01	0.00E-01	2
16 A 220* W	POLYCHLORINATED BIPHENYLS	D	0.00E-01	0.00E-01	0.00E-01	2
22 A 020* PH	FLUORENE	T	4.40E 01	0.00E-01	0.00E-01	3

TEST BURNER FLUE GAS COMPOSITE, HEALTH IMPACT

DMEG NO.	COMPOUND NAME	TYPE	CONC E-6 G/SCM	DS	WDS G/S	LCCAT
21 C 100* P W	BENZO(A)PYRENE	D	0.00E-01	0.00E-01	0.00E-01	2
53 A 010	SULFUR	S	> 1.20E 02>	0.00E-01>	0.00E-01	
22 A 020* PH	FLUORENE	T	1.30E 02	0.00E-01	0.00E-01	2
21 C 080* P	DIBENZ(A,H)ANTHRACENE	D	0.00E-01	0.00E-01	0.00E-01	2
04 A 160* P	A-CHLOROBUTYL ETHYL ETHER	T	1.30E 02	0.00E-01	0.00E-01	4
04 A 160* P	A-CHLOROBUTYL ETHYL ETHER	T	4.70E 02	0.00E-01	0.00E-01	5
21 D 080* PH	BENZO(GHI)PERYLENE	T	1.30E 02	0.00E-01	0.00E-01	2
21 D 080* PH	BENZO(GHI)PERYLENE	T	4.40E 01	0.00E-01	0.00E-01	3
21 A 100* PH	ACENAPHTHENE	T	1.30E 02	0.00E-01	0.00E-01	2
01 A 040	ETHANE	D	0.00E-01	0.00E-01	0.00E-01	
01 A 060	PROPANE	D	0.00E-01	0.00E-01	0.00E-01	
29 A 010	POTASSIUM	S	> 4.90E 02>	0.00E-01>	0.00E-01	
84 D 010	NEODYMIUM	S	2.50E-02	0.00E-01	0.00E-01	
01 A 100	PENTANES	D	0.00E-01	0.00E-01	0.00E-01	
01 A 140	HEXANES	D	0.00E-01	0.00E-01	0.00E-01	
01 B 020	ETHYLENE	D	0.00E-01	0.00E-01	0.00E-01	
59 A 010	IODINE (AS I-)	S	6.60E-01	0.00E-01	0.00E-01	
45 A 010	TIN	S	1.50E 00	0.00E-01	0.00E-01	
21 A 100* PH	ACENAPHTHENE	T	4.40E 01	0.00E-01	0.00E-01	3
21 A 120* PH	ACENAPHTHYLENE	T	1.30E 02	0.00E-01	0.00E-01	2
21 A 120* PH	ACENAPHTHYLENE	T	4.40E 01	0.00E-01	0.00E-01	3
01 A 080	BUTANES	D	0.00E-01	0.00E-01	0.00E-01	
58 A 010	BROMINE	S	4.40E-01	0.00E-01	0.00E-01	

TEST BURNER FLUE GAS COMPOSITE

FLOW RATE = 8080 G/S (6.77 SCM/S, DRY BASIS)

29.686 SCM AT 25C AND 760 MM HG SAMPLED

TOTAL ORGANIC LOADING = 5.4 MG/SCM

TOTAL TCO = NR TOTAL GRAV = 5.4 MG/SCM

55.0% ORIGINAL SAMPLE TO LC

LC TCO = NR LC GRAV = 90.3 MG LC TOTAL = 90.3 MG

LCCAT	ORGANIC LOADING
1	880.0
2	130.0
3	44.0
4	130.0
5	470.0
6	2200.0
7	910.0

FLOW RATE = 8080.00

STATE: GAS, UNITS IN MICROGRAMS/SCM

IMPACT: ECOLOGY

EXPERIMENTALY DETERMINED DATA

SPARK SOURCE DATA

TEST BURNER FLUE GAS COMPOSITE, ECOLOGY IMPACT

DMEG NO.		COMPOUND NAME	TYPE	CONC E-6 G/SCM	DS	WDS G/S	LCCAT
65 A 010		VANADIUM	S	3.60E 00	3.60E 00	2.90E 04	
83 A 010	P	MERCURY	D	1.60E 01	1.60E 00	1.30E 04	
15 A 120*		ISOPROPYL BENZENE	T	1.30E 02	1.10E-01	8.80E 02	2
15 A 120*		ISOPROPYL BENZENE	T	4.40E 01	3.70E-02	3.00E 02	3
47 A 080	P	HYDROGEN CYANIDE	D	1.02E 03	3.02E-02	2.44E 02	
47 A 060	P	AMMONIA	D	< 1.00E 01<	2.90E-02<	2.30E 02	
15 A 040*	P	TOLUENE	T	1.30E 02	2.82E-02	2.30E 02	2
15 A 040*	P	TOLUENE	T	4.40E 01	9.60E-03	7.72E 01	3
42 A 080		CARBON DIOXIDE	D	9.80E 07	0.00E-01	0.00E-01	
53 A 060		SULFUR DIOXIDE	D	2.70E 05	0.00E-01	0.00E-01	
16 A 220		POLYCHLORINATED BIPHENYLS	D	0.00E-01	0.00E-01	0.00E-01	2
01 A 060		PROPANE	D	0.00E-01	0.00E-01	0.00E-01	
01 A 080		BUTANES	D	0.00E-01	0.00E-01	0.00E-01	
01 A 100		PENTANES	D	0.00E-01	0.00E-01	0.00E-01	
01 A 140		HEXANES	D	0.00E-01	0.00E-01	0.00E-01	
21 B 040*	P	BENZ(A)ANTHRACENE	D	4.50E 02	0.00E-01	0.00E-01	2
21 B 060		7,12-DIMETHYLBENZ(A)ANTHRACENE	D	0.00E-01	0.00E-01	0.00E-01	2
21 C 080*	P	DIBENZ(A,H)ANTHRACENE	D	0.00E-01	0.00E-01	0.00E-01	2
21 C 100*	P	BENZO(A)PYRENE	D	0.00E-01	0.00E-01	0.00E-01	2
54 A 010	P	SELENIUM	D	< 1.30E 02<	0.00E-01<	0.00E-01	
01 A 020	W	METHANE	D	0.00E-01	0.00E-01	0.00E-01	
01 A 040		ETHANE	D	0.00E-01	0.00E-01	0.00E-01	
37 A 010		BORON	S	4.00E 00	0.00E-01	0.00E-01	
58 A 010		BROMINE	S	4.40E-01	0.00E-01	0.00E-01	
82 A 010	P	CADMIUM	S	> 2.00E-01>	0.00E-01>	0.00E-01	
34 A 010		CALCIUM (AS CA+2)	S	> 7.80E 02>	0.00E-01>	0.00E-01	
84 B 010		CERIUM	S	6.20E-01	0.00E-01	0.00E-01	
31 A 010		CESIUM	S	1.10E 00	0.00E-01	0.00E-01	
57 A 010		CHLORINE (AS CL-)	S	3.30E 01	0.00E-01	0.00E-01	
68 A 010	P	CHROMIUM	S	3.70E 01	0.00E-01	0.00E-01	
74 A 010		COBALT	S	1.30E 02	0.00E-01	0.00E-01	
78 A 010	P	COPPER	S	9.30E 00	0.00E-01	0.00E-01	
56 A 010		FLUORINE (AS F-)	S	1.00E 02	0.00E-01	0.00E-01	
39 A 010		GALLIUM	S	< 1.30E 00<	0.00E-01<	0.00E-01	

TEST BURNER FLUE GAS COMPOSITE, ECOLOGY IMPACT

DMEG NO.		COMPOUND NAME	TYPE	CONC E-6 G/SCM	DS	WDS G/S	LCCAT
44 A 010		GERMANIUM	S	2.00E-01	0.00E-01	0.00E-01	
59 A 010		IODINE (AS I-)	S	6.60E-01	0.00E-01	0.00E-01	
72 A 010		IRON (AS FE+2)	S	> 3.10E 02>	0.00E-01>	0.00E-01	
46 A 010	P	LEAD	S	1.50E 01	0.00E-01	0.00E-01	
27 A 010		LITHIUM	S	< 1.40E 00<	0.00E-01<	0.00E-01	
33 A 010		MAGNESIUM	S	> 1.30E 02>	0.00E-01>	0.00E-01	
71 A 010	P	MANGANESE	S	1.70E 01	0.00E-01	0.00E-01	
69 A 010		MOLYBDENUM	S	1.80E 01	0.00E-01	0.00E-01	
84 D 010		NEODYMIUM	S	2.50E-02	0.00E-01	0.00E-01	
76 A 010	P	NICKEL	S	4.50E 01	0.00E-01	0.00E-01	
66 A 010		NIOBIUM (AS NB+3)	S	> 1.00E-01>	0.00E-01>	0.00E-01	
48 A 010		PHOSPHORUS	S	1.70E 02	0.00E-01	0.00E-01	
77 A 010		PLATINUM	S	1.30E 00	0.00E-01	0.00E-01	
29 A 010		POTASSIUM	S	> 4.90E 02>	0.00E-01>	0.00E-01	
84 C 010		PRASEODYMIUM	S	1.30E-02	0.00E-01	0.00E-01	
30 A 010		RUBIDIUM (AS RB+)	S	< 3.50E-01<	0.00E-01<	0.00E-01	
60 A 010		SCANDIUM	S	< 5.00E-02<	0.00E-01<	0.00E-01	
43 A 010		SILICON	S	> 2.90E 02>	0.00E-01>	0.00E-01	
79 A 010	P	SILVER	S	9.20E-01	0.00E-01	0.00E-01	
28 A 010		SODIUM	S	> 1.40E 02>	0.00E-01>	0.00E-01	
35 A 010		STRONTIUM	S	5.50E 00	0.00E-01	0.00E-01	
53 A 010		SULFUR	S	> 1.20E 02>	0.00E-01>	0.00E-01	
45 A 010		TIN	S	1.50E 00	0.00E-01	0.00E-01	
62 A 010		TITANIUM	S	2.10E 01	0.00E-01	0.00E-01	
85 A 010		URANIUM	S	< 4.00E-02<	0.00E-01<	0.00E-01	
01 B 020	W	ETHYLENE	D	0.00E-01	0.00E-01	0.00E-01	
61 A 010		YTTRIUM (AS Y+3)	S	< 2.00E-02<	0.00E-01<	0.00E-01	
81 A 010	P	ZINC	S	1.30E 01	0.00E-01	0.00E-01	
63 A 010		ZIRCONIUM (AS ZR+4)	S	1.20E 01	0.00E-01	0.00E-01	
02 A 140*	P	DIBROMOCHLOROMETHANE	T	8.80E 02	0.00E-01	0.00E-01	1
02 A 140*	P	DIBROMOCHLOROMETHANE	T	1.30E 02	0.00E-01	0.00E-01	2
02 A 160*	P	BROMOFORM	T	8.80E 02	0.00E-01	0.00E-01	1
02 A 160*	P	BROMOFORM	T	1.30E 02	0.00E-01	0.00E-01	2
02 A 320*	P	HEXACHLOROETHANE	T	8.80E 02	0.00E-01	0.00E-01	1

TEST BURNER FLUE GAS COMPOSITE, ECOLOGY IMPACT

OMEG NO.	COMPOUND NAME	TYPE	CONC E-6 G/SCM	DS	WDS G/S	LCCAT
02 A 320* P	HEXACHLOROETHANE	T	1.30E 02	0.00E-01	0.00E-01	2
02 A 340* P	DICHLOROPROPANES	T	8.80E 02	0.00E-01	0.00E-01	1
02 A 340* P	DICHLOROPROPANES	T	1.30E 02	0.00E-01	0.00E-01	2
02 B 080* P	TETRACHLOROETHENE	T	8.80E 02	0.00E-01	0.00E-01	1
02 B 080* P	TETRACHLOROETHENE	T	1.30E 02	0.00E-01	0.00E-01	2
02 B 100* P	DICHLOROPROPENES	T	8.80E 02	0.00E-01	0.00E-01	1
02 B 100* P	DICHLOROPROPENES	T	1.30E 02	0.00E-01	0.00E-01	2
02 B 120* P	HEXACHLOROBUTADIENE	T	8.80E 02	0.00E-01	0.00E-01	1
02 B 120* P	HEXACHLOROBUTADIENE	T	1.30E 02	0.00E-01	0.00E-01	2
02 B 140* P	HEXACHLOROCYCLOPENTADIENE	T	8.80E 02	0.00E-01	0.00E-01	1
02 B 140* P	HEXACHLOROCYCLOPENTADIENE	T	1.30E 02	0.00E-01	0.00E-01	2
04 A 140* P	2-CHLOROETHYL VINYL ETHER	T	1.30E 02	0.00E-01	0.00E-01	4
04 A 140* P	2-CHLOROETHYL VINYL ETHER	T	4.70E 02	0.00E-01	0.00E-01	5
04 A 160* P	A-CHLOROBUTYL ETHYL ETHER	T	1.30E 02	0.00E-01	0.00E-01	4
04 A 160* P	A-CHLOROBUTYL ETHYL ETHER	T	4.70E 02	0.00E-01	0.00E-01	5
04 A 180* P	CHLOROPHENYL PHENYL ETHER	T	1.30E 02	0.00E-01	0.00E-01	4
04 A 180* P	CHLOROPHENYL PHENYL ETHER	T	4.70E 02	0.00E-01	0.00E-01	5
04 B 020* P	1,1'-DICHLOROMETHYL ETHER	T	1.30E 02	0.00E-01	0.00E-01	4
04 B 020* P	1,1'-DICHLOROMETHYL ETHER	T	4.70E 02	0.00E-01	0.00E-01	5
04 B 040* P	1,1'-DICHLORODIETHYL ETHER	T	1.30E 02	0.00E-01	0.00E-01	4
04 B 040* P	1,1'-DICHLORODIETHYL ETHER	T	4.70E 02	0.00E-01	0.00E-01	5
07 B 080* P	ISOPHORONE	T	4.70E 02	0.00E-01	0.00E-01	5
07 B 080* P	ISOPHORONE	T	2.20E 03	0.00E-01	0.00E-01	6
08 D 280* P	PHTHALATE ESTERS (MW:194-279)	T	4.70E 02	0.00E-01	0.00E-01	5
08 D 280* P	PHTHALATE ESTERS (MW:194-279)	T	2.20E 03	0.00E-01	0.00E-01	6
08 D 300* P	DI-2-ETHYLHEXYL PHTHALATE	T	4.70E 02	0.00E-01	0.00E-01	5
08 D 300* P	DI-2-ETHYLHEXYL PHTHALATE	T	2.20E 03	0.00E-01	0.00E-01	6
08 D 320* P	BUTYL BENZYL PHTHALATE	T	4.70E 02	0.00E-01	0.00E-01	5
08 D 320* P	BUTYL BENZYL PHTHALATE	T	2.20E 03	0.00E-01	0.00E-01	6
10 C 140* P	BENZIDINE	T	4.70E 02	0.00E-01	0.00E-01	5
10 C 140* P	BENZIDINE	T	2.20E 03	0.00E-01	0.00E-01	6
12 A 020* P	N-NITROSODIMETHYLAMINE	T	4.70E 02	0.00E-01	0.00E-01	5
12 A 020* P	N-NITROSODIMETHYLAMINE	T	2.20E 03	0.00E-01	0.00E-01	6
12 A 040* P	N-NITROSODIETHYLAMINE	T	4.70E 02	0.00E-01	0.00E-01	5

TEST BURNER FLUE GAS COMPOSITE, ECOLOGY IMPACT

DMEG NO.	COMPOUND NAME	TYPE	CONC E-6 G/SCM	DS	WDS G/S	LCCAT
12 A 040* P	N-NITROSODIETHYLAMINE	T	2.20E 03	0.00E-01	0.00E-01	6
12 A 060* P	N-NITROSODIPROPYLAMINE	T	4.70E 02	0.00E-01	0.00E-01	5
12 A 060* P	N-NITROSODIPROPYLAMINE	T	2.20E 03	0.00E-01	0.00E-01	6
50 A 010 P	ANTIMONY	D	< 1.10E 01<	0.00E-01<	0.00E-01	
49 A 010 P	ARSENIC	D	8.60E 01	0.00E-01	0.00E-01	
15 A 060* P	ETHYL BENZENE	T	1.30E 02	0.00E-01	0.00E-01	2
15 A 060* P	ETHYL BENZENE	T	4.40E 01	0.00E-01	0.00E-01	3
38 A 010	ALUMINUM	S	1.60E 01	0.00E-01	0.00E-01	
36 A 010	BARIUM	S	> 1.20E 02>	0.00E-01>	0.00E-01	
16 A 020* P	CHLOROBENZENE	T	1.30E 02	0.00E-01	0.00E-01	2
16 A 020* P	CHLOROBENZENE	T	4.40E 01	0.00E-01	0.00E-01	3
16 A 100* P	1,2-DICHLOROBENZENE	T	1.30E 02	0.00E-01	0.00E-01	2
16 A 100* P	1,2-DICHLOROBENZENE	T	4.40E 01	0.00E-01	0.00E-01	3
16 A 120* P	1,3-DICHLOROBENZENE	T	1.30E 02	0.00E-01	0.00E-01	2
16 A 120* P	1,3-DICHLOROBENZENE	T	4.40E 01	0.00E-01	0.00E-01	3
16 A 140* P	1,4-DICHLOROBENZENE	T	1.30E 02	0.00E-01	0.00E-01	2
16 A 140* P	1,4-DICHLOROBENZENE	T	4.40E 01	0.00E-01	0.00E-01	3
16 A 160* P	POLYCHLORINATED BENZENES	T	1.30E 02	0.00E-01	0.00E-01	2
16 A 160* P	POLYCHLORINATED BENZENES	T	4.40E 01	0.00E-01	0.00E-01	3
16 A 200* P	CHLORONAPHTHALENES	T	1.30E 02	0.00E-01	0.00E-01	2
16 A 200* P	CHLORONAPHTHALENES	T	4.40E 01	0.00E-01	0.00E-01	3
17 A 020* P	NITROBENZENE	T	1.30E 02	0.00E-01	0.00E-01	4
17 A 020* P	NITROBENZENE	T	4.70E 02	0.00E-01	0.00E-01	5
17 A 081* P	2,6-DINITROTOLUENE	T	1.30E 02	0.00E-01	0.00E-01	4
17 A 081* P	2,6-DINITROTOLUENE	T	4.70E 02	0.00E-01	0.00E-01	5
17 A 084* P	2,4-DINITROTOLUENE	T	1.30E 02	0.00E-01	0.00E-01	4
17 A 084* P	2,4-DINITROTOLUENE	T	4.70E 02	0.00E-01	0.00E-01	5
18 A 020* P	PHENOL	T	4.70E 02	0.00E-01	0.00E-01	5
18 A 020* P	PHENOL	T	2.20E 03	0.00E-01	0.00E-01	6
18 A 142* P	2,4-XYLENOL	T	4.70E 02	0.00E-01	0.00E-01	5
18 A 142* P	2,4-XYLENOL	T	2.20E 03	0.00E-01	0.00E-01	6
19 A 020* P	2-CHLOROPHENOL	T	4.70E 02	0.00E-01	0.00E-01	5
19 A 020* P	2-CHLOROPHENOL	T	2.20E 03	0.00E-01	0.00E-01	6
19 A 040* P	2,4-DICHLOROPHENOL	T	4.70E 02	0.00E-01	0.00E-01	5

TEST BURNER FLUE GAS COMPOSITE, ECOLOGY IMPACT

DMEG NO.	COMPOUND NAME	TYPE	CONC E-6 G/SCM	DS	WDS G/S	LCCAT
19 A 040* P	2,4-DICHLOROPHENOL	T	2.20E 03	0.00E-01	0.00E-01	6
19 A 060* P	PENTACHLOROPHENOL	T	4.70E 02	0.00E-01	0.00E-01	5
19 A 060* P	PENTACHLOROPHENOL	T	2.20E 03	0.00E-01	0.00E-01	6
19 B 022* P	CHLORINATED-M-CRESOLS	T	4.70E 02	0.00E-01	0.00E-01	5
19 B 022* P	CHLORINATED-M-CRESOLS	T	2.20E 03	0.00E-01	0.00E-01	6
20 A 020* P	2-NITROPHENOL	T	4.70E 02	0.00E-01	0.00E-01	5
20 A 020* P	2-NITROPHENOL	T	2.20E 03	0.00E-01	0.00E-01	6
20 A 060* P	4-NITROPHENOL	T	4.70E 02	0.00E-01	0.00E-01	5
20 A 060* P	4-NITROPHENOL	T	2.20E 03	0.00E-01	0.00E-01	6
20 A 101* P	2,4-DINITROPHENOL	T	4.70E 02	0.00E-01	0.00E-01	5
20 A 101* P	2,4-DINITROPHENOL	T	2.20E 03	0.00E-01	0.00E-01	6
20 B 020* P	4,6-DINITRO-O-CRESOL	T	4.70E 02	0.00E-01	0.00E-01	5
20 B 020* P	4,6-DINITRO-O-CRESOL	T	2.20E 03	0.00E-01	0.00E-01	6
21 A 020* P	NAPHTHALENE	T	1.30E 02	0.00E-01	0.00E-01	2
21 A 020* P	NAPHTHALENE	T	4.40E 01	0.00E-01	0.00E-01	3
21 A 100* PH	ACENAPHTHENE	T	1.30E 02	0.00E-01	0.00E-01	2
21 A 100* PH	ACENAPHTHENE	T	4.40E 01	0.00E-01	0.00E-01	3
21 A 120* PH	ACENAPHTHYLENE	T	1.30E 02	0.00E-01	0.00E-01	2
21 A 120* PH	ACENAPHTHYLENE	T	4.40E 01	0.00E-01	0.00E-01	3
21 A 140* P	ANTHRACENE	T	1.30E 02	0.00E-01	0.00E-01	2
21 A 140* P	ANTHRACENE	T	4.40E 01	0.00E-01	0.00E-01	3
21 A 180* P	PHENANTHRENE	T	1.30E 02	0.00E-01	0.00E-01	2
21 A 180* P	PHENANTHRENE	T	4.40E 01	0.00E-01	0.00E-01	3
21 B 040* P	BENZ(A)ANTHRACENE	T	4.40E 01	0.00E-01	0.00E-01	3
21 B 120* P	CHRYSENE	T	1.30E 02	0.00E-01	0.00E-01	2
21 B 120* P	CHRYSENE	T	4.40E 01	0.00E-01	0.00E-01	3
21 B 180* P	PYRENE	T	1.30E 02	0.00E-01	0.00E-01	2
21 B 180* P	PYRENE	T	4.40E 01	0.00E-01	0.00E-01	3
21 C 080* P	DIBENZ(A,H)ANTHRACENE	T	4.40E 01	0.00E-01	0.00E-01	3
21 C 100* P	BENZO(A)PYRENE	T	4.40E 01	0.00E-01	0.00E-01	3
21 D 080* PH	BENZO(GHI)PERYLENE	T	1.30E 02	0.00E-01	0.00E-01	2
21 D 080* PH	BENZO(GHI)PERYLENE	T	4.40E 01	0.00E-01	0.00E-01	3
22 A 020* PH	FLUORENE	T	1.30E 02	0.00E-01	0.00E-01	2
22 A 020* PH	FLUORENE	T	4.40E 01	0.00E-01	0.00E-01	3

TEST BURNER FLUE GAS COMPOSITE, ECOLOGY IMPACT

DMEG NO.		COMPOUND NAME	TYPE	CONC E-6 G/SCM	DS	WDS G/S	LCCAT
22 B 040*	P	FLUORANTHENE	T	1.30E 02	0.00E-01	0.00E-01	2
22 B 040*	P	FLUORANTHENE	T	4.40E 01	0.00E-01	0.00E-01	3
22 C 020*	P	BENZO(K)FLUORANTHENE	T	1.30E 02	0.00E-01	0.00E-01	2
22 C 020*	P	BENZO(K)FLUORANTHENE	T	4.40E 01	0.00E-01	0.00E-01	3
22 C 080*	P	BENZO(B)FLUORANTHENE	T	1.30E 02	0.00E-01	0.00E-01	2
22 C 080*	P	BENZO(B)FLUORANTHENE	T	4.40E 01	0.00E-01	0.00E-01	3
22 D 020*	P	INDENO(1,2,3-CD)PYRENE	T	1.30E 02	0.00E-01	0.00E-01	2
22 D 020*	P	INDENO(1,2,3-CD)PYRENE	T	4.40E 01	0.00E-01	0.00E-01	3

GASIFIER ASH SLUICE WATER

APPROXIMATE FLOW RATE = 7.0 G/S (0.007 L/S)

TOTAL ORGANIC LOADING 125.7 MG/L

ORGANIC LOADING

125700.0

FLOW RATE = 7.00

STATE: LIQUID, UNITS IN MICROGRAMS/L

IMPACT: HEALTH

EXPERIMENTALY DETERMINED DATA

SPARK SOURCE DATA

GASIFIER ASH SLUICE WATER, HEALTH IMPACT

DMEG NO.			COMPOUND NAME	TYPE	CONC E-6 G/L	DS	WDS G/S	LCCAT
16 A 220		W	POLYCHLORINATED BIPHENYLS	T	1.30E 05	2.51E 07	1.80E 08	
21 C 100*	P	W	BENZO(A)PYRENE	T	1.30E 05	4.20E 05	2.93E 06	
21 C 080*	P		DIBENZ(A,H)ANTHRACENE	T	1.30E 05	9.00E 04	6.30E 05	
18 C 020		W	1-NAPHTHOL	T	1.30E 05	2.51E 04	1.80E 05	
18 A 142*	P		2,4-XYLENOL	T	1.30E 05	2.51E 04	1.80E 05	
18 A 145			3,5-XYLENOL	T	1.30E 05	2.51E 04	1.80E 05	
18 C 040		W	2-NAPHTHOL	T	1.30E 05	2.51E 04	1.80E 05	
18 A 160		W	ETHYL CRESOLS	T	1.30E 05	2.51E 04	1.80E 05	
18 A 144			2,6-XYLENOL	T	1.30E 05	2.51E 04	1.80E 05	
18 A 162			4-ETHYL-O-CRESOL	T	1.30E 05	2.51E 04	1.80E 05	
18 A 163			2-ETHYL-P-CRESOL	T	1.30E 05	2.51E 04	1.80E 05	
18 A 180		W	POLYALKYLPHENOLS (MW>135)	T	1.30E 05	2.51E 04	1.80E 05	
18 A 181			2,4,6-TRIMETHYL METHYL PHENOL	T	1.30E 05	2.51E 04	1.80E 05	
18 A 182			4,6-DI-TERT-BUTYL-M-CRESOL	T	1.30E 05	2.51E 04	1.80E 05	
18 A 183			2,6-DIMETHYL-4-HEPTYL PHENOL	T	1.30E 05	2.51E 04	1.80E 05	
18 B 020		W	CATECHOL	T	1.30E 05	2.51E 04	1.80E 05	
18 B 040		W	1,3-DIHYDROXYBENZENE	T	1.30E 05	2.51E 04	1.80E 05	
18 B 060		W	1,4-DIHYDROXYBENZENE	T	1.30E 05	2.51E 04	1.80E 05	
18 B 080		W	1,2,3-TRIHYDROXYBENZENE	T	1.30E 05	2.51E 04	1.80E 05	
20 B 020*	P	W	4,6-DINITRO-O-CRESOL	T	1.30E 05	2.51E 04	1.80E 05	
18 A 083			P-ETHYLPHENOL	T	1.30E 05	2.51E 04	1.80E 05	
18 C 080		W	INDANOLS	T	1.30E 05	2.51E 04	1.80E 05	
18 C 081			1-INDANOL	T	1.30E 05	2.51E 04	1.80E 05	
18 C 082			4-INDANOL	T	1.30E 05	2.51E 04	1.80E 05	
18 C 083			5-INDANOL	T	1.30E 05	2.51E 04	1.80E 05	
19 A 020*	P	W	2-CHLOROPHENOL	T	1.30E 05	2.51E 04	1.80E 05	
18 A 161			6-ETHYL-M-CRESOL	T	1.30E 05	2.51E 04	1.80E 05	
18 A 081			O-ETHYLPHENOL	T	1.30E 05	2.51E 04	1.80E 05	
19 A 040*	P	W	2,4-DICHLOROPHENOL	T	1.30E 05	2.51E 04	1.80E 05	
20 A 080		W	2-AMINO-4,6-DINITROPHENOL	T	1.30E 05	2.51E 04	1.80E 05	
18 A 100		W	PHENYLPHENOLS	T	1.30E 05	2.51E 04	1.80E 05	
19 A 060*	P	W	PENTACHLOROPHENOL	T	1.30E 05	2.51E 04	1.80E 05	
18 A 102			P-PHENYLPHENOL	T	1.30E 05	2.51E 04	1.80E 05	
18 A 103			M-PHENYLPHENOL	T	1.30E 05	2.51E 04	1.80E 05	

GASIFIER ASH SLUICE WATER, HEALTH IMPACT

DMEG NO.				COMPOUND NAME	TYPE	CONC E-6 G/L	DS	WDS G/S	LCCAT
19 B 020			W	CHLORINATED CRESOLS	T	1.30E 05	2.51E 04	1.80E 05	
19 B 021				CHLORINATED-O-CRESOLS	T	1.30E 05	2.51E 04	1.80E 05	
19 B 022*	P			CHLORINATED-M-CRESOLS	T	1.30E 05	2.51E 04	1.80E 05	
18 A 082				M-ETHYLPHENOL	T	1.30E 05	2.51E 04	1.80E 05	
18 A 146				3,4-XYLENOL	T	1.30E 05	2.51E 04	1.80E 05	
18 A 143				2,5-XYLENOL	T	1.30E 05	2.51E 04	1.80E 05	
20 A 020*	P	W		2-NITROPHENOL	T	1.30E 05	2.51E 04	1.80E 05	
18 A 042				O-CRESOL	T	1.30E 05	2.51E 04	1.80E 05	
20 B 040			W	DINITRO-P-CRESOLS	T	1.30E 05	2.51E 04	1.80E 05	
20 A 040			W	3-NITROPHENOL	T	1.30E 05	2.51E 04	1.80E 05	
20 A 060*	P	W		4-NITROPHENOL	T	1.30E 05	2.51E 04	1.80E 05	
20 A 120			W	2,4,6-TRINITROPHENOL	T	1.30E 05	2.51E 04	1.80E 05	
18 A 141				2,3-XYLENOL	T	1.30E 05	2.51E 04	1.80E 05	
18 A 043				P-CRESOL	T	1.30E 05	2.51E 04	1.80E 05	
20 A 100			W	DINITROPHENOLS	T	1.30E 05	2.51E 04	1.80E 05	
20 A 101*	P			2,4-DINITROPHENOL	T	1.30E 05	2.51E 04	1.80E 05	
18 A 041				M-CRESOL	T	1.30E 05	2.51E 04	1.80E 05	
18 A 101				O-PHENYLPHENOL	T	1.30E 05	2.51E 04	1.80E 05	
20 A 102				2,5-DINITROPHENOL	T	1.30E 05	2.51E 04	1.80E 05	
20 A 103				2,6-DINITROPHENOL	T	1.30E 05	2.51E 04	1.80E 05	
18 A 080			W	ETHYLPHENOLS	T	1.30E 05	2.51E 04	1.80E 05	
18 A 140			W	XYLENOLS	T	1.30E 05	2.51E 04	1.80E 05	
20 B 041				3,5-DINITRO-P-CRESOL	T	1.30E 05	2.51E 04	1.80E 05	
18 A 040			W	CRESOLS	T	1.30E 05	2.51E 04	1.80E 05	
18 A 120			W	2,2'-DIHYDROXYDIPHENYL	T	1.30E 05	2.51E 04	1.80E 05	
20 B 042				2,6-DINITRO-P-CRESOL	T	1.30E 05	2.51E 04	1.80E 05	
19 B 023				CHLORINATED-P-CRESOLS	T	1.30E 05	2.51E 04	1.80E 05	
18 A 060			W	2-METHOXYPHENOL	T	1.30E 05	2.51E 04	1.80E 05	
02 A 380			W	HEXACHLOROCYCLOHEXANE	T	1.30E 05	6.30E 03	4.40E 04	
21 B 080				3-METHYLCHOLANTHRENE	T	1.30E 05	2.24E 03	1.60E 04	
04 B 020*	P	W		1,1'-DICHLOROMETHYL ETHER	T	1.30E 05	1.70E 03	1.20E 04	
21 D 040			W	DIBENZO(A,I)PYRENE	T	1.30E 05	1.93E 02	1.40E 03	
21 B 040*	P			BENZ(A)ANTHRACENE	T	1.30E 05	1.90E 02	1.31E 03	
12 A 020*	P	W		N-NITROSODIMETHYLAMINE	T	1.30E 05	1.30E 02	8.80E 02	

GASIFIER ASH SLUICE WATER, HEALTH IMPACT

DMEG NO.			COMPOUND NAME	TYPE	CONC E-6 G/L	DS	WDS G/S	LCCAT
23 C 160		W	DIBENZO(C,G)CARBAZOLE	T	1.30E 05	8.40E 01	5.90E 02	
10 C 100			1,4-DIAMINOBENZENE	T	1.30E 05	8.40E 01	5.90E 02	
02 B 140*	P	W	HEXACHLOROCYCLOPENTADIENE	T	1.30E 05	7.90E 01	5.50E 02	
10 C 041			2-AMINOTOLUENE	T	1.30E 05	7.40E 01	5.20E 02	
10 C 040			AMINOTOLUENES	T	1.30E 05	7.40E 01	5.20E 02	
10 C 042			3-AMINOTOLUENE	T	1.30E 05	7.40E 01	5.20E 02	
10 C 043			4-AMINOTOLUENE	T	1.30E 05	7.40E 01	5.20E 02	
18 A 020	P	W	PHENOL	D	3.60E 02	7.20E 01	5.04E 02	
12 A 040*	P		N-NITROSODIETHYLAMINE	T	1.30E 05	7.00E 01	4.90E 02	
10 C 220			2-AMINONAPHTHALENE	T	1.30E 05	5.02E 01	3.51E 02	
23 B 100		W	DIHYDROACRIDINE	T	1.30E 05	5.02E 01	3.51E 02	
21 B 106			7-METHYL BENZO(C)PHENANTHRENE	T	1.30E 05	3.70E 01	2.60E 02	
21 B 103			2-METHYL BENZO(C)PHENANTHRENE	T	1.30E 05	3.70E 01	2.60E 02	
21 B 108			ISOPROPYL BENZO(C)PHENANTHRENE	T	1.30E 05	3.70E 01	2.60E 02	
21 B 107			8-METHYL BENZO(C)PHENANTHRENE	T	1.30E 05	3.70E 01	2.60E 02	
21 B 104			5-METHYL BENZO(C)PHENANTHRENE	T	1.30E 05	3.70E 01	2.60E 02	
21 B 105			6-METHYL BENZO(C)PHENANTHRENE	T	1.30E 05	3.70E 01	2.60E 02	
21 B 100			BENZO(C)PHENANTHRENE & ALKYL DERIVATIVES	T	1.30E 05	3.70E 01	2.60E 02	
21 B 10A			N-PROPYL BENZO(C)PHENANTHRENE	T	1.30E 05	3.70E 01	2.60E 02	
21 B 102			1-METHYL BENZO(C)PHENANTHRENE	T	1.30E 05	3.70E 01	2.60E 02	
21 B 101			BENZO(C)PHENANTHRENE	T	1.30E 05	3.70E 01	2.60E 02	
23 B 240			DIBENZ(A,H)ACRIDINE	T	1.30E 05	3.70E 01	2.60E 02	
21 B 109			6-ETHYL BENZO(C)PHENANTHRENE	T	1.30E 05	3.70E 01	2.60E 02	
21 B 108			2-ETHYL BENZO(C)PHENANTHRENE	T	1.30E 05	3.70E 01	2.60E 02	
23 B 220			DIBENZ(A,J)ACRIDINE	T	1.30E 05	3.40E 01	2.40E 02	
08 B 060		W	B-PROPIOLACTONE	T	1.30E 05	2.61E 01	1.83E 02	
10 C 083			P-ANISIDINE	T	1.30E 05	1.70E 01	1.20E 02	
10 C 080			ANISIDINES	T	1.30E 05	1.70E 01	1.20E 02	
10 C 081			O-ANISIDINE	T	1.30E 05	1.70E 01	1.20E 02	
10 C 082			M-ANISIDINE	T	1.30E 05	1.70E 01	1.20E 02	
13 A 100		W	BENZENETHIOL	T	1.30E 05	1.70E 01	1.20E 02	
10 C 200			1-AMINONAPHTHALENE	T	1.30E 05	1.50E 01	1.03E 02	
14 B 020		W	DIMETHYL SULFOXIDE	T	1.30E 05	1.04E 01	7.33E 01	
13 A 140			PERCHLOROMETHANETHIOL	T	1.30E 05	1.04E 01	7.33E 01	

GASIFIER ASH SLUICE WATER, HEALTH IMPACT

DMEG NO.		COMPOUND NAME	TYPE	CONC E-6 G/L	DS	WDS G/S	LCCAT
22 C 080* P W		BENZO(B)FLUORANTHENE	T	1.30E 05	9.70E 00	6.80E 01	
08 C 060	W	6-HEXANELACTAM	T	1.30E 05	8.40E 00	5.90E 01	
15 A 160	W	BIPHENYL	T	1.30E 05	8.40E 00	5.90E 01	
10 C 140* P		BENZIDINE	T	1.30E 05	8.40E 00	5.90E 01	
17 B 040	W	1-CHLORO-2-NITROBENZENE	T	1.30E 05	8.40E 00	5.90E 01	
17 B 060	W	1-CHLORO-4-NITROBENZENE	T	1.30E 05	8.40E 00	5.90E 01	
21 D 060		DIBENZO(A,L)PYRENE	T	1.30E 05	7.90E 00	5.50E 01	
08 A 122		PALMITIC ACID	T	1.30E 05	7.90E 00	5.50E 01	
08 A 121		MYRISTIC ACID	T	1.30E 05	7.90E 00	5.50E 01	
08 A 120	W	SATURATED LONG CHAIN ACIDS (MW:228-285)	T	1.30E 05	7.90E 00	5.50E 01	
08 A 123		STEARIC ACID	T	1.30E 05	7.90E 00	5.50E 01	
12 B 020	W	N-METHYL-N-NITROSOANILINE	T	1.30E 05	6.61E 00	4.63E 01	
17 A 060	W	4-NITROBIPHENYL	T	1.30E 05	6.30E 00	4.40E 01	
10 C 120		4-AMINOBIPHENYL	T	1.30E 05	6.30E 00	4.40E 01	
02 A 180		DIBROMODICHLOROMETHANE	T	1.30E 05	6.00E 00	4.20E 01	
17 A 086		3,5-DINITROTOLUENE	T	1.30E 05	5.50E 00	3.82E 01	
17 A 085		2,5-DINITROTOLUENE	T	1.30E 05	5.50E 00	3.82E 01	
17 A 080		DINITROTOLUENES	T	1.30E 05	5.50E 00	3.82E 01	
17 A 081* P		2,6-DINITROTOLUENE	T	1.30E 05	5.50E 00	3.82E 01	
17 A 083		2,3-DINITROTOLUENE	T	1.30E 05	5.50E 00	3.82E 01	
17 A 084* P		2,4-DINITROTOLUENE	T	1.30E 05	5.50E 00	3.82E 01	
17 A 082		3,4-DINITROTOLUENE	T	1.30E 05	5.50E 00	3.82E 01	
21 A 180* P W		PHENANTHRENE	T	1.30E 05	5.50E 00	3.82E 01	
22 D 020* P W		INDENO(1,2,3-CD)PYRENE	T	1.30E 05	5.23E 00	3.70E 01	
22 C 020* P		BENZO(K)FLUORANTHENE	T	1.30E 05	5.23E 00	3.70E 01	
21 B 142		5-METHYL CHRYSENE	T	1.30E 05	5.23E 00	3.70E 01	
21 B 140		METHYL CHRYSENES	T	1.30E 05	4.70E 00	3.30E 01	
21 B 141		4-METHYL CHRYSENE	T	1.30E 05	4.70E 00	3.30E 01	
04 A 050	W	EPICHLORHYDRIN	T	1.30E 05	4.70E 00	3.30E 01	
04 A 040	W	2-CHLORO-1,2-EPOXYPROPANE	T	1.30E 05	4.20E 00	2.93E 01	
15 B 060	W	4,4'-DIPHENYLBIPHENYL	T	1.30E 05	4.20E 00	2.93E 01	
04 A 060	W	1-CHLORO-1,3-EPOXYPROPANE	T	1.30E 05	4.20E 00	2.93E 01	
21 B 120* P		CHRYSENE	T	1.30E 05	4.20E 00	2.93E 01	
12 A 060* P		N-NITROSODIPROPYLAMINE	T	1.30E 05	3.80E 00	2.70E 01	
			T	1.30E 05	3.50E 00	2.44E 01	

GASIFIER ASH SLUICE WATER, HEALTH IMPACT

DMEG NO.			COMPOUND NAME	TYPE	CONC E-6 G/L	DS	WDS G/S	LCCAT
21 C 160			PICENE	T	1.30E 05	3.30E 00	2.31E 01	
23 C 020			PYRROLE	T	1.30E 05	3.10E 00	2.14E 01	
09 A 120		W	TETRAMETHYLSUCCINONITRILE	T	1.30E 05	2.80E 00	2.00E 01	
21 C 120			BENZO(E)PYRENE	T	1.30E 05	2.73E 00	1.91E 01	
08 A 140			OLEIC ACID	T	1.30E 05	2.51E 00	1.80E 01	
03 B 020		W	1,4-DIOXANE	T	1.30E 05	2.32E 00	1.62E 01	
03 B 040		W	1,3-DIOXANE	T	1.30E 05	2.32E 00	1.62E 01	
21 D 020			DIBENZO(A,H)PYRENE	T	1.30E 05	2.24E 00	1.60E 01	
47 A 060	P		AMMONIA	D	5.40E 03	2.20E 00	1.51E 01	
28 A 010			SODIUM	D	1.70E 06	2.12E 00	1.50E 01	
02 B 120*	P		HEXACHLOROBUTADIENE	T	1.30E 05	2.10E 00	1.44E 01	
23 D 020		W	BENZOTHIAZOLE	T	1.30E 05	2.00E 00	1.40E 01	
23 D 040			METHYL BENZOTHIAZOLE	T	1.30E 05	1.80E 00	1.23E 01	
02 A 160*	P		BROMOFORM	T	1.30E 05	1.70E 00	1.20E 01	
08 D 283			DI-N-BUTYL PHTHALATE	T	1.30E 05	1.70E 00	1.20E 01	
17 A 020*	P		NITROBENZENE	T	1.30E 05	1.70E 00	1.20E 01	
08 D 282			DIETHYL PHTHALATE	T	1.30E 05	1.70E 00	1.20E 01	
16 B 020		W	A-CHLOROTOLUENE	T	1.30E 05	1.70E 00	1.20E 01	
08 D 281			DIMETHYL PHTHALATE	T	1.30E 05	1.70E 00	1.20E 01	
08 D 300*	P		DI-2-ETHYLHEXYL PHTHALATE	T	1.30E 05	1.70E 00	1.20E 01	
08 D 280*	P	W	PHTHALATE ESTERS (MW:194-279)	T	1.30E 05	1.70E 00	1.20E 01	
08 A 102			CAPRYLIC ACID	T	1.30E 05	1.44E 00	1.01E 01	
08 A 100			SATURATED LONG CHAIN ACIDS (MW:116-201)	T	1.30E 05	1.44E 00	1.01E 01	
08 A 104			LAURIC ACID	T	1.30E 05	1.44E 00	1.01E 01	
08 A 101			CAPROIC ACID	T	1.30E 05	1.44E 00	1.01E 01	
08 A 103			CAPRIC ACID	T	1.30E 05	1.44E 00	1.01E 01	
23 A 100		W	CHLOROPYRIDINES	T	1.30E 05	1.42E 00	1.00E 01	
23 A 102			3-CHLOROPYRIDINE	T	1.30E 05	1.42E 00	1.00E 01	
23 A 101			2-CHLOROPYRIDINE	T	1.30E 05	1.42E 00	1.00E 01	
23 A 103			4-CHLOROPYRIDINE	T	1.30E 05	1.42E 00	1.00E 01	
23 C 180			DIBENZO(A,G)CARBAZOLE	T	1.30E 05	1.40E 00	9.80E 00	
10 A 060			ETHANOLAMINE	T	1.30E 05	1.40E 00	9.80E 00	
22 C 040			BENZO(J)FLUORANTHENE	T	1.30E 05	1.30E 00	9.00E 00	
16 B 041			1,2-BIS(CHLOROMETHYBENZENE	T	1.30E 05	1.30E 00	8.80E 00	

GASIFIER ASH SLUICE WATER, HEALTH IMPACT

DMEG NO.			COMPOUND NAME	TYPE	CONC E-6 G/L	DS	WDS G/S	LCCAT
16 B 042			1,3-BIS(CHLOROMETHYL)BENZENE	T	1.30E 05	1.30E 00	8.80E 00	
16 B 040			BIS(CHLOROMETHYL)BENZENES	T	1.30E 05	1.30E 00	8.80E 00	
16 B 043			1,4-BIS(CHLOROMETHYL)BENZENE	T	1.30E 05	1.30E 00	8.80E 00	
27 A 010			LITHIUM	S	4.00E 02	1.21E 00	8.50E 00	
34 A 010			CALCIUM (AS CA+2)	D	2.20E 05	9.20E-01	6.41E 00	
15 B 163			P-TERPHENYL	T	1.30E 05	9.00E-01	6.30E 00	
15 B 161			O-TERPHENYL	T	1.30E 05	9.00E-01	6.30E 00	
15 B 160			TERPHENYLS	T	1.30E 05	9.00E-01	6.30E 00	
15 B 162			M-TERPHENYL	T	1.30E 05	9.00E-01	6.30E 00	
21 C 060			DIBENZ(A,C)ANTHRACENE	T	1.30E 05	8.40E-01	5.90E 00	
06 A 020		W	ETHYLENE GLYCOL	T	1.30E 05	8.40E-01	5.90E 00	
02 A 320*	P		HEXACHLOROETHANE	T	1.30E 05	8.40E-01	5.90E 00	
72 A 010			IRON (AS FE+2)	D	1.20E 03	8.00E-01	5.60E 00	
04 B 100			2,2'-DICHLORODIISOPROPYL ETHER	T	1.30E 05	7.90E-01	5.50E 00	
23 B 200			BENZ(C)ACRIDINE	T	1.30E 05	7.90E-01	5.50E 00	
23 C 040			INDOLE	T	1.30E 05	7.40E-01	5.20E 00	
02 B 103			CIS-1,3-DICHLOROPROPENE	T	1.30E 05	7.40E-01	5.20E 00	
02 B 100*	P		DICHLOROPROPENES	T	1.30E 05	7.40E-01	5.20E 00	
02 B 104			TRANS-1,3-DICHLOROPROPENE	T	1.30E 05	7.40E-01	5.20E 00	
04 A 140*	P		2-CHLOROETHYL VINYL ETHER	T	1.30E 05	7.40E-01	5.20E 00	
07 B 100		W	CAMPHOR	T	1.30E 05	7.00E-01	4.90E 00	
23 C 140			DIBENZO(A,I)CARBAZOLE	T	1.30E 05	7.00E-01	4.90E 00	
16 A 162			HEXACHLOROBENZENE	T	1.30E 05	7.00E-01	4.90E 00	
16 A 160*	P		POLYCHLORINATED BENZENES	T	1.30E 05	7.00E-01	4.90E 00	
16 A 161			1,2,4-TRICHLOROBENZENE	T	1.30E 05	7.00E-01	4.90E 00	
08 D 080			METHYL METHACRYLATE	T	1.30E 05	6.00E-01	4.20E 00	
23 A 020			PYRIDINE	T	1.30E 05	5.50E-01	3.82E 00	
21 C 040			BENZO(G)CHRYSENE	T	1.30E 05	5.23E-01	3.70E 00	
23 B 021			QUINOLINE	T	1.30E 05	5.23E-01	3.70E 00	
23 B 022			ISOQUINOLINE	T	1.30E 05	5.23E-01	3.70E 00	
23 B 020			QUINOLINES	T	1.30E 05	5.23E-01	3.70E 00	
23 A 143			2,5-DIMETHYLPYRIDINE	T	1.30E 05	4.70E-01	3.30E 00	
23 A 142			2,4-DIMETHYLPYRIDINE	T	1.30E 05	4.70E-01	3.30E 00	
23 A 146			2,3,4,6-TETRAMETHYL PYRIDINE	T	1.30E 05	4.70E-01	3.30E 00	

GASIFIER ASH SLUICE WATER, HEALTH IMPACT

DMEG NO.		COMPOUND NAME	TYPE	CONC E-6 G/L	DS	WDS G/S	LCCAT
23 A 145		3,4-DIMETHYLPYRIDINE	T	1.30E 05	4.70E-01	3.30E 00	
05 B 100	W	1-PHENYLETHANOL	T	1.30E 05	4.70E-01	3.30E 00	
23 A 141		2,3-DIMETHYLPYRIDINE	T	1.30E 05	4.70E-01	3.30E 00	
23 A 140		DISUBSTITUTED POLYSUBSTITUTED ALKYL PYRIDINES	T	1.30E 05	4.70E-01	3.30E 00	
23 A 144		2,6-DIMETHYLPYRIDINE	T	1.30E 05	4.70E-01	3.30E 00	
23 C 120		BENZO(A)CARBAZOLE	T	1.30E 05	4.70E-01	3.30E 00	
10 C 020		ANILINE	T	1.30E 05	4.50E-01	3.14E 00	
54 A 010	P	SELENIUM	T	1.30E 05	4.33E-01	3.03E 00	
09 A 100		1,3-DICYANO-1-HYDROXYBUTANE	D	2.00E 01	4.00E-01	2.80E 00	
09 A 080		BUTYRONITRILE	T	1.30E 05	3.80E-01	2.70E 00	
25 A 040		METHYLTHIOPHENES	T	1.30E 05	3.80E-01	2.70E 00	
25 A 041		2-METHYLTHIOPHENE	T	1.30E 05	3.70E-01	2.60E 00	
23 C 101		3-METHYLCARBAZOLE	T	1.30E 05	3.70E-01	2.60E 00	
23 C 100		METHYLCARBAZOLES	T	1.30E 05	3.70E-01	2.60E 00	
23 C 102		9-METHYLCARBAZOLE	T	1.30E 05	3.70E-01	2.60E 00	
08 A 080		VALERIC ACID	T	1.30E 05	3.70E-01	2.60E 00	
25 A 042		3-METHYLTHIOPHENE	T	1.30E 05	3.70E-01	2.60E 00	
23 B 260		DIBENZ(C,H)ACRIDINE	T	1.30E 05	3.70E-01	2.60E 00	
23 C 080		CARBAZOLE	T	1.30E 05	3.60E-01	2.51E 00	
25 B 040	W	BENZO(B)THIOPHENE	T	1.30E 05	3.60E-01	2.51E 00	
10 C 064		2,6-XYLIDINE	T	1.30E 05	3.60E-01	2.51E 00	
10 C 065		3,4-XYLIDINE	T	1.30E 05	3.30E-01	2.31E 00	
10 C 063		2,5-XYLIDINE	T	1.30E 05	3.30E-01	2.31E 00	
10 A 080		1,2-DIAMINOETHANE	T	1.30E 05	3.30E-01	2.31E 00	
10 C 061		2,3-XYLIDINE	T	1.30E 05	3.30E-01	2.31E 00	
08 A 040		ACETIC ACID	T	1.30E 05	3.30E-01	2.31E 00	
10 D 020	W	N,N-DIMETHYLANILINE	T	1.30E 05	3.30E-01	2.31E 00	
10 C 060		DIMETHYLANILINES	T	1.30E 05	3.30E-01	2.31E 00	
07 B 080*	P	ISOPHORONE	T	1.30E 05	3.30E-01	2.31E 00	
10 C 066		3,5-XYLIDINE	T	1.30E 05	3.30E-01	2.31E 00	
10 C 062		2,4-XYLIDINE	T	1.30E 05	3.30E-01	2.31E 00	
25 A 061		2,3-DIMETHYLTHIOPHENE	T	1.30E 05	3.30E-01	2.31E 00	
25 A 064		3,4-DIMETHYLTHIOPHENE	T	1.30E 05	3.22E-01	2.30E 00	
25 A 063		2,5-DIMETHYLTHIOPHENE	T	1.30E 05	3.22E-01	2.30E 00	

GASIFIER ASH SLUICE WATER, HEALTH IMPACT

DMEG NO.		COMPOUND NAME	TYPE	CONC E-6 G/L	DS	WDS G/S	LCCAT
25 A 060		DIMETHYLTHIOPHENES	T	1.30E 05	3.22E-01	2.30E 00	
25 A 062		2,4-DIMETHYLTHIOPHENE	T	1.30E 05	3.22E-01	2.30E 00	
04 A 180*	P	CHLOROPHENYL PHENYL ETHER	T	1.30E 05	3.10E-01	2.14E 00	
04 A 200		4-BROMOPHENYL PHENYL ETHER	T	1.30E 05	3.10E-01	2.14E 00	
25 A 081		2,3,5-TRIMETHYLTHIOPHENE	T	1.30E 05	2.90E-01	2.00E 00	
25 A 080		TRIMETHYL AND TETRAMETHYL THIOPHENES	T	1.30E 05	2.90E-01	2.00E 00	
01 B 220	W	DICYCLOPENTADIENE	T	1.30E 05	2.80E-01	2.00E 00	
17 A 041		2-NITROTOLUENE	T	1.30E 05	2.80E-01	2.00E 00	
08 C 020		FORMAMIDE	T	1.30E 05	2.80E-01	2.00E 00	
04 B 080		2,2'-DICHLORODIETHYL ETHER	T	1.30E 05	2.80E-01	2.00E 00	
17 A 043		4-NITROTOLUENE	T	1.30E 05	2.80E-01	2.00E 00	
17 A 042		3-NITROTOLUENE	T	1.30E 05	2.80E-01	2.00E 00	
17 A 040		NITROTOLUENES	T	1.30E 05	2.80E-01	2.00E 00	
04 B 040*	P	1,1'-DICHLORODIETHYL ETHER	T	1.30E 05	2.61E-01	1.83E 00	
08 A 060		MALEIC ACID	T	1.30E 05	2.60E-01	1.80E 00	
09 B 041		A-NAPHTHONITRILES	T	1.30E 05	2.60E-01	1.80E 00	
09 B 020	W	BENZONITRILE	T	1.30E 05	2.60E-01	1.80E 00	
09 B 042		B-NAPHTHONITRILES	T	1.30E 05	2.60E-01	1.80E 00	
09 B 040	W	NAPHTHONITRILES	T	1.30E 05	2.40E-01	1.70E 00	
23 A 043		4-METHYLPYRIDINE	T	1.30E 05	2.40E-01	1.70E 00	
23 A 042		3-METHYLPYRIDINE	T	1.30E 05	2.40E-01	1.70E 00	
23 A 041		2-METHYLPYRIDINE	T	1.30E 05	2.32E-01	1.62E 00	
10 A 123		1-AMINO-2-PROPANOL	T	1.30E 05	2.32E-01	1.62E 00	
10 A 122		3-AMINO-1-PROPANOL	T	1.30E 05	2.32E-01	1.62E 00	
08 B 080		Y-BUTYROLACTONE	T	1.30E 05	2.32E-01	1.62E 00	
10 A 120		PROPANOLAMINES	T	1.30E 05	2.32E-01	1.62E 00	
10 A 121		2-AMINO-1-PROPANOL	T	1.30E 05	2.32E-01	1.62E 00	
26 A 020	W	TRIETHYL PHOSPHATE	T	1.30E 05	2.20E-01	1.54E 00	
12 A 080		N-NITROSODIISOPROPYLAMINE	T	1.30E 05	2.10E-01	1.50E 00	
08 B 041		2-HYDROXYBENZOIC ACID	T	1.30E 05	2.10E-01	1.50E 00	
14 A 020	W	BENZENESULFONIC ACID	T	1.30E 05	2.10E-01	1.50E 00	
10 A 160		CYCLOHEXYLAMINE	T	1.30E 05	2.10E-01	1.44E 00	
07 B 120		ACETOPHENONE	T	1.30E 05	1.84E-01	1.30E 00	
23 C 061		2-METHYLINDOLE					

GASIFIER ASH SLUICE WATER, HEALTH IMPACT

DMEG NO.		COMPOUND NAME	TYPE	CONC E-6 G/L	DS	WDS G/S	LCCAT
05 C 040	W	T-PENTANOL	T	1.30E 05	1.84E-01	1.30E 00	
22 A 010	W	INDENE	T	1.30E 05	1.84E-01	1.30E 00	
02 A 140*	P	DIBROMOCHLOROMETHANE	T	1.30E 05	1.84E-01	1.30E 00	
23 C 062		3-METHYLINDOLE	T	1.30E 05	1.84E-01	1.30E 00	
23 C 060		METHYLINDOLES	T	1.30E 05	1.84E-01	1.30E 00	
21 A 020*	P	NAPHTHALENE	T	1.30E 05	1.84E-01	1.30E 00	
23 B 062		2,6-DIMETHYLQUINOLINE	T	1.30E 05	1.70E-01	1.20E 00	
23 B 061		2,3-DIMETHYLQUINOLINE	T	1.30E 05	1.51E-01	1.10E 00	
23 B 067		1,5-DIMETHYLISOQUINOLINE	T	1.30E 05	1.51E-01	1.10E 00	
23 B 065		6,8-DIMETHYLQUINOLINE	T	1.30E 05	1.51E-01	1.10E 00	
23 B 063		2,8-DIMETHYLQUINOLINE	T	1.30E 05	1.51E-01	1.10E 00	
23 B 064		3,4-DIMETHYLQUINOLINE	T	1.30E 05	1.51E-01	1.10E 00	
23 B 066		1,3-DIMETHYLISOQUINOLINE	T	1.30E 05	1.51E-01	1.10E 00	
05 A 140	W	BENZYL ALCOHOL	T	1.30E 05	1.51E-01	1.10E 00	
23 B 040		2-METHYLQUINOLINE	T	1.30E 05	1.51E-01	1.10E 00	
23 B 060		DIMETHYLQUINOLINES	T	1.30E 05	1.51E-01	1.10E 00	
21 A 140*	P	ANTHRACENE	T	1.30E 05	1.50E-01	1.04E 00	
02 A 361		1-BROMOBUTANE	T	1.30E 05	1.50E-01	1.03E 00	
02 A 360		BROMOBUTANES	T	1.30E 05	1.50E-01	1.03E 00	
07 A 140		BENZALDEHYDE	T	1.30E 05	1.42E-01	1.00E 00	
80 A 010	P	MERCURY	D	1.40E 00	1.40E-01	9.80E-01	
08 D 160		METHYL BENZOATE	T	1.30E 05	1.40E-01	9.70E-01	
38 A 010		ALUMINUM	D	1.10E 04	1.40E-01	9.62E-01	
23 A 083		4-PHENYLPYRIDINE	T	1.30E 05	1.30E-01	8.80E-01	
23 A 122		2,4,6-COLLIDINE	T	1.30E 05	1.30E-01	8.80E-01	
23 A 082		3-PHENYLPYRIDINE	T	1.30E 05	1.30E-01	8.80E-01	
23 A 064		4-N-PROPYLPYRIDINE	T	1.30E 05	1.30E-01	8.80E-01	
23 A 120		COLLIDINES	T	1.30E 05	1.30E-01	8.80E-01	
23 A 061		2-ETHYLPYRIDINE	T	1.30E 05	1.30E-01	8.80E-01	
23 A 121		5-ETHYL-2-METHYLPYRIDINE	T	1.30E 05	1.30E-01	8.80E-01	
23 A 063		4-ETHYLPYRIDINE	T	1.30E 05	1.30E-01	8.80E-01	
23 A 060		MONOSUBSTITUTED ALKYL PYRIDINES	T	1.30E 05	1.30E-01	8.80E-01	
10 B 100		MORPHOLINE	T	1.30E 05	1.30E-01	8.80E-01	
16 A 201		1-CHLORONAPHTHALENE	T	1.30E 05	1.30E-01	8.80E-01	

GASIFIER ASH SLUICE WATER, HEALTH IMPACT

DMEG NO.		COMPOUND NAME	TYPE	CONC E-6 G/L	DS	WDS G/S	LCCAT
23 A 081		2-PHENYLPYRIDINE	T	1.30E 05	1.30E-01	8.80E-01	
23 A 062		3-ETHYLPYRIDINE	T	1.30E 05	1.30E-01	8.80E-01	
16 A 202		2-CHLORONAPHTHALENE	T	1.30E 05	1.30E-01	8.80E-01	
16 A 200*	P	CHLORONAPHTHALENES	T	1.30E 05	1.30E-01	8.80E-01	
23 A 080		PHENYLPYRIDINES	T	1.30E 05	1.30E-01	8.80E-01	
33 A 010		MAGNESIUM	D	1.10E 04	1.22E-01	8.60E-01	
08 D 200		DIETHYL ADIPATE	T	1.30E 05	1.14E-01	8.00E-01	
07 B 182		DIHYDRO-(D OR L)CARVONE	T	1.30E 05	1.14E-01	8.00E-01	
07 B 181		CARVONE(D OR L)	T	1.30E 05	1.14E-01	8.00E-01	
07 B 180		CARVONES	T	1.30E 05	1.14E-01	8.00E-01	
05 A 160		PHENETHYL ALCOHOL	T	1.30E 05	1.04E-01	7.33E-01	
12 A 100		N-NITROSODIPENTYLAMINE	T	1.30E 05	1.04E-01	7.33E-01	
37 A 010		BORON	D	4.60E 03	9.80E-02	6.90E-01	
13 B 060		DIPHENYL SULFIDE	T	1.30E 05	9.00E-02	6.30E-01	
13 B 080		METHYL DISULFIDE	T	1.30E 05	9.00E-02	6.30E-01	
05 B 120		BORNEOL	T	1.30E 05	9.00E-02	6.30E-01	
23 B 080		ACRIDINE	T	1.30E 05	9.00E-02	6.30E-01	
23 B 160		BENZO(H)QUINOLINE	T	1.30E 05	9.00E-02	6.30E-01	
23 B 140		BENZO(F)QUINOLINE	T	1.30E 05	9.00E-02	6.30E-01	
23 B 120		PHENANTHRIDINE	T	1.30E 05	9.00E-02	6.30E-01	
22 B 040*	P W	FLUORANTHENE	T	1.30E 05	9.00E-02	6.30E-01	
35 A 010		STRONTIUM	D	4.00E 03	8.70E-02	6.10E-01	
76 A 010	P	NICKEL	S	2.00E 01	8.70E-02	6.10E-01	
15 A 141		N-BUTYL BENZENE	T	1.30E 05	8.40E-02	5.90E-01	
15 A 143		TERT-BUTYL BENZENE	T	1.30E 05	8.40E-02	5.90E-01	
15 A 142		SEC-BUTYL BENZENE	T	1.30E 05	8.40E-02	5.90E-01	
15 A 140		BUTYL BENZENES	T	1.30E 05	8.40E-02	5.90E-01	
15 B 203		1,2,4,5-TETRAMETHYLBENZENE	T	1.30E 05	7.00E-02	4.90E-01	
15 B 202		1,2,3,5-TETRAMETHYLBENZENE	T	1.30E 05	7.00E-02	4.90E-01	
15 B 200		TETRAMETHYLBENZENES	T	1.30E 05	7.00E-02	4.90E-01	
15 B 180		TRIMETHYLBENZENES	T	1.30E 05	7.00E-02	4.90E-01	
15 B 183		1,3,5-TRIMETHYLBENZENE	T	1.30E 05	7.00E-02	4.90E-01	
15 B 182		1,2,4-TRIMETHYLBENZENE	T	1.30E 05	7.00E-02	4.90E-01	
15 B 201		1,2,3,4-TETRAMETHYLBENZENE	T	1.30E 05	7.00E-02	4.90E-01	

GASIFIER ASH SLUICE WATER, HEALTH IMPACT

DMEG NO.			COMPOUND NAME	TYPE	CONC E-6 G/L	DS	WDS G/S	LCCAT
15 B 181			1,2,3-TRIMETHYLBENZENE	T	1.30E 05	7.00E-02	4.90E-01	
15 B 141			1,2-DIHYDRONAPHTHALENE	T	1.30E 05	6.61E-02	4.63E-01	
15 B 142			1,4-DIHYDRONAPHTHALENE	T	1.30E 05	6.61E-02	4.63E-01	
15 B 140			DIHYDRONAPHTHALENES	T	1.30E 05	6.61E-02	4.63E-01	
03 B 060			2-ETHYL-4-METHYL-1,3-DIOXOLANE	T	1.30E 05	6.61E-02	4.63E-01	
15 B 120			TETRAHYDRONAPHTHALENE	T	1.30E 05	6.61E-02	4.63E-01	
26 B 040		W	TRITOTYL PHOSPHATES	T	1.30E 05	6.30E-02	4.40E-01	
57 A 010			CHLORINE (AS CL-)	T	1.30E 05	6.30E-02	4.40E-01	
08 D 320*		P	BUTYL BENZYL PHTHALATE	D	7.80E 04	6.00E-02	4.20E-01	
08 A 160			BENZOIC ACID	T	1.30E 05	6.00E-02	4.20E-01	
14 A 043			9,10-ANTHRAQUINONE-1,7-DISULFONIC ACID	T	1.30E 05	6.00E-02	4.20E-01	
14 A 044			9,10-ANTHRAQUINONE-1,8-DISULFONIC ACID	T	1.30E 05	5.71E-02	4.00E-01	
14 A 041			9,10-ANTHRAQUINONE-1,5-DISULFONIC ACID	T	1.30E 05	5.71E-02	4.00E-01	
05 A 100			ISOBUTYL ALCOHOL	T	1.30E 05	5.71E-02	4.00E-01	
06 B 020		W	2,3-EPOXY-1-PROPANOL	T	1.30E 05	5.50E-02	3.82E-01	
05 A 080			N-BUTANOL	T	1.30E 05	5.50E-02	3.82E-01	
08 A 180			ADIPIC ACID	T	1.30E 05	5.50E-02	3.82E-01	
03 A 040		W	3-METHOXYBIPHENYL	T	1.30E 05	5.23E-02	3.70E-01	
05 B 080			2,6-DIMETHYL-4-HEPTANOL	T	1.30E 05	5.23E-02	3.70E-01	
05 C 060			A-TERPINEOL	T	1.30E 05	5.23E-02	3.70E-01	
47 A 080		P	HYDROGEN CYANIDE	D	< 2.00E 01<	4.33E-02	3.03E-01	
82 A 010		P	CADMIUM	S	< 2.00E 00<	4.00E-02<	2.80E-01	
17 B 023			1-METHOXY-4-NITROBENZENE	T	1.30E 05	4.00E-02<	2.80E-01	
17 B 022			1-METHOXY-3-NITROBENZENE	T	1.30E 05	3.92E-02	2.74E-01	
17 B 020			METHOXYNITROBENZENES	T	1.30E 05	3.92E-02	2.74E-01	
17 B 021			1-METHOXY-2-NITROBENZENE	T	1.30E 05	3.92E-02	2.74E-01	
21 A 080			DIMETHYLNAPHTHALENES	T	1.30E 05	3.92E-02	2.74E-01	
21 A 044			2-ETHYLNAPHTHALENE	T	1.30E 05	3.70E-02	2.60E-01	
21 A 042			2-METHYLNAPHTHALENE	T	1.30E 05	3.70E-02	2.60E-01	
15 B 020			INDAN	T	1.30E 05	3.70E-02	2.60E-01	
21 A 043			1-ETHYLNAPHTHALENE	T	1.30E 05	3.70E-02	2.60E-01	
21 A 041			1-METHYLNAPHTHALENE	T	1.30E 05	3.70E-02	2.60E-01	
21 A 083			2,6-DIMETHYLNAPHTHALENE	T	1.30E 05	3.70E-02	2.60E-01	
21 A 082			2,3-DIMETHYLNAPHTHALENE	T	1.30E 05	3.70E-02	2.60E-01	

GASIFIER ASH SLUICE WATER, HEALTH IMPACT

DMEG NO.			COMPOUND NAME	TYPE	CONC E-6 G/L	DS	WDS G/S	LCCAT
21 A 040			MONOALKYL NAPHTHALENES	T	1.30E 05	3.70E-02	2.60E-01	
21 A 081			1,4-DIMETHYLNAPHTHALENE	T	1.30E 05	3.70E-02	2.60E-01	
21 B 180*	P		PYRENE	T	1.30E 05	3.60E-02	2.51E-01	
15 A 120			ISOPROPYL BENZENE	T	1.30E 05	3.40E-02	2.34E-01	
15 A 100			PROPYL BENZENE	T	1.30E 05	3.40E-02	2.34E-01	
08 D 240			DI-2-ETHYLBUTYL ADIPATE	T	1.30E 05	3.30E-02	2.31E-01	
16 A 180			2-CHLOROTOLUENE	T	1.30E 05	3.30E-02	2.31E-01	
46 A 010	P		LEAD	S	8.00E 00	3.20E-02	2.24E-01	
65 A 010			VANADIUM	D	7.70E 01	3.10E-02	2.20E-01	
26 B 020			TRIPHENYL PHOSPHATE	T	1.30E 05	2.92E-02	2.04E-01	
68 A 010	P		CHROMIUM	D	7.00E 00	2.80E-02	2.00E-01	
16 A 120*	P		1,3-DICHLOROBENZENE	T	1.30E 05	2.80E-02	2.00E-01	
16 A 100*	P		1,2-DICHLOROBENZENE	T	1.30E 05	2.80E-02	2.00E-01	
48 A 010			PHOSPHORUS	S	4.00E 02	2.70E-02	1.90E-01	
36 A 010			BARIUM	D	1.30E 02	2.60E-02	1.81E-01	
01 A 201			N-OCTANE	T	1.30E 05	2.40E-02	1.70E-01	
02 A 343			1,3-DICHLOROPROPANE	T	1.30E 05	2.40E-02	1.70E-01	
02 A 340*	P		DICHLOROPROPANES	T	1.30E 05	2.40E-02	1.70E-01	
01 A 200		W	OCTANES	T	1.30E 05	2.40E-02	1.70E-01	
16 A 020*	P		CHLOROBENZENE	T	1.30E 05	2.40E-02	1.70E-01	
05 A 123			2,2-DIMETHYL-1-PROPANOL	T	1.30E 05	2.32E-02	1.62E-01	
05 A 120			PENTANOLS (PRIMARY)	T	1.30E 05	2.32E-02	1.62E-01	
05 A 124			3-METHYL-1-BUTANOL	T	1.30E 05	2.32E-02	1.62E-01	
05 A 122			2-METHYL-1-BUTANOL	T	1.30E 05	2.32E-02	1.62E-01	
05 B 063			3-METHYL-2-BUTANOL	T	1.30E 05	2.32E-02	1.62E-01	
05 B 060			PENTANOLS (SECONDARY)	T	1.30E 05	2.32E-02	1.62E-01	
05 A 121			N-PENTANOL	T	1.30E 05	2.32E-02	1.62E-01	
05 B 062			3-PENTANOL	T	1.30E 05	2.32E-02	1.62E-01	
05 B 061			2-PENTANOL	T	1.30E 05	2.32E-02	1.62E-01	
56 A 010			FLUORINE (AS F-)	D	8.70E 02	2.30E-02	1.60E-01	
15 A 040*	P		TOLUENE	T	1.30E 05	2.24E-02	1.60E-01	
16 A 080			BROMOCHLOROBENZENES	T	1.30E 05	2.13E-02	1.50E-01	
16 A 082			1-BROMO-3-CHLOROBENZENE	T	1.30E 05	2.13E-02	1.50E-01	
16 A 083			1-BROMO-4-CHLOROBENZENE	T	1.30E 05	2.13E-02	1.50E-01	

GASIFIER ASH SLUICE WATER, HEALTH IMPACT

DMEG NO.		COMPOUND NAME	TYPE	CONC E-6 G/L	DS	WDS G/S	LCCAT
16 A 081		1-BROMO-2-CHLOROBENZENE	T	1.30E 05	2.13E-02	1.50E-01	
08 D 260		DI-2-ETHYLHEXYL ADIPATE	T	1.30E 05	2.02E-02	1.41E-01	
15 A 080		STYRENE	T	1.30E 05	2.00E-02	1.40E-01	
15 B 102		M-DIETHYL BENZENE	T	1.30E 05	1.93E-02	1.40E-01	
15 B 082		M-XYLENE	T	1.30E 05	1.93E-02	1.40E-01	
15 B 104		O-DIISOPROPYL BENZENE	T	1.30E 05	1.93E-02	1.40E-01	
15 B 101		O-DIETHYL BENZENE	T	1.30E 05	1.93E-02	1.40E-01	
15 B 100		DIALKYL BENZENES (MW:134-191)	T	1.30E 05	1.93E-02	1.40E-01	
15 A 060*	P	ETHYL BENZENE	T	1.30E 05	1.93E-02	1.40E-01	
15 B 103		P-DIETHYL BENZENE	T	1.30E 05	1.93E-02	1.40E-01	
15 B 083		P-XYLENE	T	1.30E 05	1.93E-02	1.40E-01	
15 B 106		1,4-DI-TERT-BUTYL BENZENE	T	1.30E 05	1.93E-02	1.40E-01	
15 B 081		O-XYLENE	T	1.30E 05	1.93E-02	1.40E-01	
15 B 105		M-DIISOPROPYL BENZENE	T	1.30E 05	1.93E-02	1.40E-01	
15 B 080		XYLENES	T	1.30E 05	1.93E-02	1.40E-01	
16 A 140*	P	1,4-DICHLOROBENZENE	T	1.30E 05	1.93E-02	1.40E-01	
16 A 061		1,2-DIBROMOBENZENE	T	1.30E 05	1.84E-02	1.30E-01	
16 A 063		1,4-DIBROMOBENZENE	T	1.30E 05	1.74E-02	1.22E-01	
16 A 062		1,3-DIBROMOBENZENE	T	1.30E 05	1.74E-02	1.22E-01	
16 A 060		DIBROMOBENZENES	T	1.30E 05	1.74E-02	1.22E-01	
16 A 040		BROMOBENZENE	T	1.30E 05	1.74E-02	1.22E-01	
08 D 142		SEC-AMYL ACETATE	T	1.30E 05	1.72E-02	1.20E-01	
08 D 143		ISOAMYL ACETATE	T	1.30E 05	1.60E-02	1.11E-01	
08 D 141		N-AMYL ACETATE	T	1.30E 05	1.60E-02	1.11E-01	
08 D 140		AMYL ACETATES	T	1.30E 05	1.60E-02	1.11E-01	
08 D 220		DIBUTYL ADIPATE	T	1.30E 05	1.60E-02	1.11E-01	
49 A 010	P	ARSENIC	T	1.30E 05	1.44E-02	1.01E-01	
02 B 080*	P	TETRACHLOROETHENE	D	3.30E 00	1.32E-02	9.23E-02	
08 D 122		SEC-BUTYL ACETATE	T	1.30E 05	1.30E-02	8.80E-02	
08 D 123		ISOBUTYL ACETATE	T	1.30E 05	1.14E-02	8.00E-02	
08 D 120		BUTYL ACETATES	T	1.30E 05	1.14E-02	8.00E-02	
08 D 121		N-BUTYL ACETATE	T	1.30E 05	1.14E-02	8.00E-02	
71 A 010	P	MANGANESE	T	1.30E 05	1.14E-02	8.00E-02	
69 A 010		MOLYBDENUM	D	2.00E 00	8.00E-03	5.60E-02	
			D	3.10E 02	4.13E-03	2.90E-02	

GASIFIER ASH SLUICE WATER, HEALTH IMPACT

DMEG NO.		COMPOUND NAME	TYPE	CONC E-6 G/L	DS	WDS G/S	LCCAT
79 A 010	P	SILVER	S	1.00E 00	4.00E-03	2.80E-02	
78 A 010	P	COPPER	D	1.70E 01	3.40E-03	2.40E-02	
74 A 010		COBALT	S	< 2.00E 00<	2.70E-03<	1.90E-02	
43 A 010		SILICON	S	3.00E 02	2.00E-03	1.40E-02	
81 A 010	P	ZINC	D	4.40E 01	1.80E-03	1.25E-02	
70 A 010		TUNGSTEN	S	2.00E 01	1.33E-03	9.33E-03	
62 A 010		TITANIUM	D	4.40E 01	4.90E-04	3.42E-03	
50 A 010	P	ANTIMONY	D	2.00E 00	2.70E-04	1.90E-03	
39 A 010		GALLIUM	S	8.00E 00	1.10E-04	7.60E-04	
63 A 010		ZIRCONIUM (AS ZR+4)	S	2.00E 00	2.70E-05	1.90E-04	
30 A 010		RUBIDIUM (AS RB+)	S	4.00E 01	2.22E-05	1.60E-04	
66 A 010		NIOBIUM (AS NB+3)	S	2.00E 00	6.10E-06	4.24E-05	
84 B 010		CERIUM	S	2.00E 00	3.63E-06	2.54E-05	
84 C 010		PRASEODYMIUM	S	1.00E 00	1.30E-06	9.10E-06	
84 A 010		LANTHANUM	S	< 1.00E 00<	5.90E-07<	4.11E-06	
16 A 120*	P	1,3-DICHLOROBENZENE	T	0.00E-01	0.00E-01	0.00E-01	3
07 B 080*	P	ISOPHORONE	T	0.00E-01	0.00E-01	0.00E-01	5
02 A 160*	P	BROMOFORM	T	0.00E-01	0.00E-01	0.00E-01	1
53 A 010		SULFUR	D	9.70E 05	0.00E-01	0.00E-01	
21 A 120*	PH	ACENAPHTHYLENE	T	0.00E-01	0.00E-01	0.00E-01	3
16 A 100*	P	1,2-DICHLOROBENZENE	T	0.00E-01	0.00E-01	0.00E-01	3
04 B 020*	P W	1,1'-DICHLOROMETHYL ETHER	T	0.00E-01	0.00E-01	0.00E-01	5
45 A 010		TIN	D	3.00E 03	0.00E-01	0.00E-01	
08 D 280*	P W	PHTHALATE ESTERS (MW:194-279)	T	0.00E-01	0.00E-01	0.00E-01	6
19 A 040*	P W	2,4-DICHLOROPHENOL	T	0.00E-01	0.00E-01	0.00E-01	5
53 A 040		SULFITE, SO3 -2	D	4.70E 04	0.00E-01	0.00E-01	
47 A 030		NITRITE, NO2-	D	< 1.00E 01<	0.00E-01<	0.00E-01	
16 A 200*	P	CHLORONAPHTHALENES	T	0.00E-01	0.00E-01	0.00E-01	2
17 A 020*	P	NITROBENZENE	T	0.00E-01	0.00E-01	0.00E-01	4
08 D 300*	P	DI-2-ETHYLHEXYL PHTHALATE	T	0.00E-01	0.00E-01	0.00E-01	6
02 B 140*	P W	HEXACHLOROCYCLOPENTADIENE	T	0.00E-01	0.00E-01	0.00E-01	1
08 D 260*	P W	PHTHALATE ESTERS (MW:194-279)	T	0.00E-01	0.00E-01	0.00E-01	5
02 B 100*	P	DICHLOROPROPENES	T	0.00E-01	0.00E-01	0.00E-01	2
21 A 100*	PH	ACENAPHTHENE	T	0.00E-01	0.00E-01	0.00E-01	2

GASIFIER ASH SLUICE WATER, HEALTH IMPACT

DMEG NO.	COMPOUND NAME	TYPE	CONC E-6 G/L	DS	WDS G/S	LCCAT
21 A 100* PH	ACENAPHTHENE	T	0.00E-01	0.00E-01	0.00E-01	3
47 A 020	NITRATE, NO3-	D	3.00E 03	0.00E-01	0.00E-01	
02 B 120* P	HEXACHLOROBUTADIENE	T	0.00E-01	0.00E-01	0.00E-01	1
21 C 080* P	DIBENZ(A,H)ANTHRACENE	T	0.00E-01	0.00E-01	0.00E-01	3
16 A 100* P	1,2-DICHLOROBENZENE	T	0.00E-01	0.00E-01	0.00E-01	2
19 A 020* P W	2-CHLOROPHENOL	T	0.00E-01	0.00E-01	0.00E-01	5
21 A 140* P	ANTHRACENE	T	0.00E-01	0.00E-01	0.00E-01	3
16 A 120* P	1,3-DICHLOROBENZENE	T	0.00E-01	0.00E-01	0.00E-01	2
21 A 180* P W	PHENANTHRENE	T	0.00E-01	0.00E-01	0.00E-01	2
21 A 180* P W	PHENANTHRENE	T	0.00E-01	0.00E-01	0.00E-01	3
29 A 010	POTASSIUM	S	> 1.00E 04>	0.00E-01>	0.00E-01	
04 B 040* P	1,1'-DICHLORODIETHYL ETHER	T	0.00E-01	0.00E-01	0.00E-01	5
16 A 140* P	1,4-DICHLOROBENZENE	T	0.00E-01	0.00E-01	0.00E-01	3
21 D 080* PH	BENZO(GHI)PERYLENE	T	0.00E-01	0.00E-01	0.00E-01	2
21 A 140* P	ANTHRACENE	T	0.00E-01	0.00E-01	0.00E-01	2
08 D 320* P	BUTYL BENZYL PHTHALATE	T	0.00E-01	0.00E-01	0.00E-01	5
02 A 140* P	DIBROMOCHLOROMETHANE	T	0.00E-01	0.00E-01	0.00E-01	2
53 A 030	SULFATE, SO4 -2	D	2.90E 06	0.00E-01	0.00E-01	
22 A 020* PH	FLUORENE	T	0.00E-01	0.00E-01	0.00E-01	3
02 A 160* P	BROMOFORM	T	0.00E-01	0.00E-01	0.00E-01	2
22 B 040* P W	FLUORANTHENE	T	0.00E-01	0.00E-01	0.00E-01	2
48 A 020	PHOSPHATE, PO4 -3	D	< 1.00E 02<	0.00E-01<	0.00E-01	
17 A 081* P	2,6-DINITROTOLUENE	T	0.00E-01	0.00E-01	0.00E-01	4
04 A 180* P	CHLOROPHENYL PHENYL ETHER	T	0.00E-01	0.00E-01	0.00E-01	5
22 C 020* P	BENZO(K)FLUORANTHENE	T	0.00E-01	0.00E-01	0.00E-01	3
02 A 340* P	DICHLOROPROPANES	T	0.00E-01	0.00E-01	0.00E-01	1
04 B 020* P W	1,1'-DICHLOROMETHYL ETHER	T	0.00E-01	0.00E-01	0.00E-01	4
21 B 120* P	CHRYSENE	T	0.00E-01	0.00E-01	0.00E-01	2
21 B 120* P	CHRYSENE	T	0.00E-01	0.00E-01	0.00E-01	3
58 A 010	BROMINE	S	2.00E 01	0.00E-01	0.00E-01	
08 D 300* P	DI-2-ETHYLHEXYL PHTHALATE	T	0.00E-01	0.00E-01	0.00E-01	5
22 D 020* P W	INDENO(1,2,3-CD)PYRENE	T	0.00E-01	0.00E-01	0.00E-01	3
17 A 081* P	2,6-DINITROTOLUENE	T	0.00E-01	0.00E-01	0.00E-01	5
02 B 080* P	TETRACHLOROETHENE	T	0.00E-01	0.00E-01	0.00E-01	2

GASIFIER ASH SLUICE WATER, HEALTH IMPACT

DMEG NO.	COMPOUND NAME	TYPE	CONC E-6 G/L	DS	WDS G/S	LCCAT
08 D 320* P	BUTYL BENZYL PHTHALATE	T	0.00E-01	0.00E-01	0.00E-01	6
02 B 100* P	DICHLOROPROPENES	T	0.00E-01	0.00E-01	0.00E-01	1
18 A 142* P	2,4-XYLENOL	T	0.00E-01	0.00E-01	0.00E-01	5
18 A 142* P	2,4-XYLENOL	T	0.00E-01	0.00E-01	0.00E-01	6
21 A 120* PH	ACENAPHTHYLENE	T	0.00E-01	0.00E-01	0.00E-01	2
12 A 020* P W	N-NITROSODIMETHYLAMINE	T	0.00E-01	0.00E-01	0.00E-01	5
12 A 020* P W	N-NITROSODIMETHYLAMINE	T	0.00E-01	0.00E-01	0.00E-01	6
02 A 320* P	HEXACHLOROETHANE	T	0.00E-01	0.00E-01	0.00E-01	2
12 A 040* P	N-NITROSODIETHYLAMINE	T	0.00E-01	0.00E-01	0.00E-01	5
12 A 040* P	N-NITROSODIETHYLAMINE	T	0.00E-01	0.00E-01	0.00E-01	6
02 B 140* P W	HEXACHLOROCYCLOPENTADIENE	T	0.00E-01	0.00E-01	0.00E-01	2
12 A 060* P	N-NITROSODIPROPYLAMINE	T	0.00E-01	0.00E-01	0.00E-01	5
12 A 060* P	N-NITROSODIPROPYLAMINE	T	0.00E-01	0.00E-01	0.00E-01	6
16 A 140* P	1,4-DICHLOROBENZENE	T	0.00E-01	0.00E-01	0.00E-01	2
21 D 080* PH	BENZO(GHI)PERYLENE	T	1.30E 05	0.00E-01	0.00E-01	
21 B 040* P	BENZ(A)ANTHRACENE	T	0.00E-01	0.00E-01	0.00E-01	3
02 B 120* P	HEXACHLOROBUTADIENE	T	0.00E-01	0.00E-01	0.00E-01	2
16 A 160* P	POLYCHLORINATED BENZENES	T	0.00E-01	0.00E-01	0.00E-01	2
16 A 160* P	POLYCHLORINATED BENZENES	T	0.00E-01	0.00E-01	0.00E-01	3
04 A 140* P	2-CHLOROETHYL VINYL ETHER	T	0.00E-01	0.00E-01	0.00E-01	4
04 A 140* P	2-CHLOROETHYL VINYL ETHER	T	0.00E-01	0.00E-01	0.00E-01	5
04 A 160* P	A-CHLOROBUTYL ETHYL ETHER	T	1.30E 05	0.00E-01	0.00E-01	
04 A 160* P	A-CHLOROBUTYL ETHYL ETHER	T	0.00E-01	0.00E-01	0.00E-01	4
04 A 160* P	A-CHLOROBUTYL ETHYL ETHER	T	0.00E-01	0.00E-01	0.00E-01	5
16 A 200* P	CHLORONAPHTHALENES	T	0.00E-01	0.00E-01	0.00E-01	3
04 A 180* P	CHLOROPHENYL PHENYL ETHER	T	0.00E-01	0.00E-01	0.00E-01	4
15 A 040* P	TOLUENE	T	0.00E-01	0.00E-01	0.00E-01	2
15 A 040* P	TOLUENE	T	0.00E-01	0.00E-01	0.00E-01	3
19 A 020* P W	2-CHLOROPHENOL	T	0.00E-01	0.00E-01	0.00E-01	6
15 A 060* P	ETHYL BENZENE	T	0.00E-01	0.00E-01	0.00E-01	2
15 A 060* P	ETHYL BENZENE	T	0.00E-01	0.00E-01	0.00E-01	3
19 A 040* P W	2,4-DICHLOROPHENOL	T	0.00E-01	0.00E-01	0.00E-01	6
22 D 020* P W	INDENO(1,2,3-CD)PYRENE	T	0.00E-01	0.00E-01	0.00E-01	2
19 A 060* P W	PENTACHLOROPHENOL	T	0.00E-01	0.00E-01	0.00E-01	5

GASIFIER ASH SLUICE WATER, HEALTH IMPACT

DMEG NO.	COMPOUND NAME	TYPE	CONC E-6 G/L	DS	WDS G/S	LCCAT
19 A 060* P W	PENTACHLOROPHENOL	T	0.00E-01	0.00E-01	0.00E-01	6
17 A 020* P	NITROBENZENE	T	0.00E-01	0.00E-01	0.00E-01	5
21 B 180* P	PYRENE	T	0.00E-01	0.00E-01	0.00E-01	2
21 B 180* P	PYRENE	T	0.00E-01	0.00E-01	0.00E-01	3
19 B 022* P	CHLORINATED-M-CRESOLS	T	0.00E-01	0.00E-01	0.00E-01	5
19 B 022* P	CHLORINATED-M-CRESOLS	T	0.00E-01	0.00E-01	0.00E-01	6
21 A 120* PH	ACENAPHTHYLENE	T	1.30E 05	0.00E-01	0.00E-01	
21 C 080* P	DIBENZ(A,H)ANTHRACENE	T	0.00E-01	0.00E-01	0.00E-01	2
20 A 020* P W	2-NITROPHENOL	T	0.00E-01	0.00E-01	0.00E-01	5
20 A 020* P W	2-NITROPHENOL	T	0.00E-01	0.00E-01	0.00E-01	6
21 C 100* P W	BENZO(A)PYRENE	T	0.00E-01	0.00E-01	0.00E-01	2
21 C 100* P W	BENZO(A)PYRENE	T	0.00E-01	0.00E-01	0.00E-01	3
20 A 060* P W	4-NITROPHENOL	T	0.00E-01	0.00E-01	0.00E-01	5
20 A 060* P W	4-NITROPHENOL	T	0.00E-01	0.00E-01	0.00E-01	6
17 A 084* P	2,4-DINITROTOLUENE	T	0.00E-01	0.00E-01	0.00E-01	4
17 A 084* P	2,4-DINITROTOLUENE	T	0.00E-01	0.00E-01	0.00E-01	5
21 B 040* P	BENZ(A)ANTHRACENE	T	0.00E-01	0.00E-01	0.00E-01	2
20 A 101* P	2,4-DINITROPHENOL	T	0.00E-01	0.00E-01	0.00E-01	5
20 A 101* P	2,4-DINITROPHENOL	T	0.00E-01	0.00E-01	0.00E-01	6
21 D 080* PH	BENZO(GHI)PERYLENE	T	0.00E-01	0.00E-01	0.00E-01	3
02 A 140* P	DIBROMOCHLOROMETHANE	T	0.00E-01	0.00E-01	0.00E-01	1
22 A 020* PH	FLUORENE	T	1.30E 05	0.00E-01	0.00E-01	
22 A 020* PH	FLUORENE	T	0.00E-01	0.00E-01	0.00E-01	2
20 B 020* P W	4,6-DINITRO-O-CRESOL	T	0.00E-01	0.00E-01	0.00E-01	5
20 B 020* P W	4,6-DINITRO-O-CRESOL	T	0.00E-01	0.00E-01	0.00E-01	6
07 B 080* P	ISOPHORONE	T	0.00E-01	0.00E-01	0.00E-01	6
22 B 040* P W	FLUORANTHENE	T	0.00E-01	0.00E-01	0.00E-01	3
02 A 320* P	HEXACHLOROETHANE	T	0.00E-01	0.00E-01	0.00E-01	1
22 C 020* P	BENZO(K)FLUORANTHENE	T	0.00E-01	0.00E-01	0.00E-01	2
21 A 020* P	NAPHTHALENE	T	0.00E-01	0.00E-01	0.00E-01	2
21 A 020* P	NAPHTHALENE	T	0.00E-01	0.00E-01	0.00E-01	3
02 A 340* P	DICHLOROPROPANES	T	0.00E-01	0.00E-01	0.00E-01	2
22 C 080* P W	BENZO(B)FLUORANTHENE	T	0.00E-01	0.00E-01	0.00E-01	2
22 C 080* P W	BENZO(B)FLUORANTHENE	T	0.00E-01	0.00E-01	0.00E-01	3

GASIFIER ASH SLUICE WATER, HEALTH IMPACT

DMEG NO.	COMPOUND NAME	TYPE	CONC E-6 G/L	DS	WDS G/S	LCCAT
04 B 040* P	1,1'-DICHLORODIETHYL ETHER	T	0.00E-01	0.00E-01	0.00E-01	4
16 A 020* P	CHLOROBENZENE	T	0.00E-01	0.00E-01	0.00E-01	2
16 A 020* P	CHLOROBENZENE	T	0.00E-01	0.00E-01	0.00E-01	3
02 B 080* P	TETRACHLOROETHENE	T	0.00E-01	0.00E-01	0.00E-01	1
10 C 140* P	BENZIDINE	T	0.00E-01	0.00E-01	0.00E-01	5
10 C 140* P	BENZIDINE	T	0.00E-01	0.00E-01	0.00E-01	6
21 A 100* PH	ACENAPHTHENE	T	1.30E 05	0.00E-01	0.00E-01	

GASIFIER ASH SLUICE WATER

APPROXIMATE FLOW RATE = 7.0 G/S (0.007 L/S)

TOTAL ORGANIC LOADING 125.7 MG/L

ORGANIC LOADING

125700.0

FLOW RATE = 7.00

STATE: LIQUID, UNITS IN MICROGRAMS/L

IMPACT: ECOLOGY

EXPERIMENTALY DETERMINED DATA

SPARK SOURCE DATA

GASIFIER ASH SLUICE WATER, ECOLOGY IMPACT

DMEG NO.			COMPOUND NAME	TYPE	CONC E-6 G/L	DS	WDS G/S	LCCAT
16 A 220		W	POLYCHLORINATED BIPHENYLS	T	1.30E 05	2.51E 07	1.80E 08	
02 A 380		W	HEXACHLOROCYCLOHEXANE	T	1.30E 05	6.30E 06	4.40E 07	
08 D 283			DI-N-BUTYL PHTHALATE	T	1.30E 05	8.40E 04	5.90E 05	
08 D 282			DIETHYL PHTHALATE	T	1.30E 05	8.40E 04	5.90E 05	
08 D 281			DIMETHYL PHTHALATE	T	1.30E 05	8.40E 04	5.90E 05	
08 D 280*	P	W	PHTHALATE ESTERS (MW:194-279)	T	1.30E 05	8.40E 04	5.90E 05	
19 A 060*	P	W	PENTACHLOROPHENOL	T	1.30E 05	5.02E 03	3.51E 04	
16 A 040			BROMOBENZENE	T	1.30E 05	1.30E 03	8.80E 03	
26 B 040		W	TRITOTYL PHOSPHATES	T	1.30E 05	1.30E 03	8.80E 03	
16 A 020*	P		CHLOROBENZENE	T	1.30E 05	1.30E 03	8.80E 03	
16 A 162			HEXACHLOROBENZENE	T	1.30E 05	1.30E 03	8.80E 03	
16 A 081			1-BROMO-2-CHLOROBENZENE	T	1.30E 05	1.30E 03	8.80E 03	
16 A 082			1-BROMO-3-CHLOROBENZENE	T	1.30E 05	1.30E 03	8.80E 03	
16 A 083			1-BROMO-4-CHLOROBENZENE	T	1.30E 05	1.30E 03	8.80E 03	
16 A 100*	P		1,2-DICHLOROBENZENE	T	1.30E 05	1.30E 03	8.80E 03	
10 C 200		W	1-AMINONAPHTHALENE	T	1.30E 05	1.30E 03	8.80E 03	
16 A 080			BROMOCHLOROBENZENES	T	1.30E 05	1.30E 03	8.80E 03	
16 A 120*	P		1,3-DICHLOROBENZENE	T	1.30E 05	1.30E 03	8.80E 03	
20 A 101*	P		2,4-DINITROPHENOL	T	1.30E 05	1.30E 03	8.80E 03	
10 C 140*	P	W	BENZIDINE	T	1.30E 05	1.30E 03	8.80E 03	
16 A 062			1,3-DIBROMOBENZENE	T	1.30E 05	1.30E 03	8.80E 03	
16 A 063			1,4-DIBROMOBENZENE	T	1.30E 05	1.30E 03	8.80E 03	
20 A 080		W	2-AMINO-4,6-DINITROPHENOL	T	1.30E 05	1.30E 03	8.80E 03	
16 A 160*	P		POLYCHLORINATED BENZENES	T	1.30E 05	1.30E 03	8.80E 03	
16 B 043			1,4-BIS(CHLOROMETHYL)BENZENE	T	1.30E 05	1.30E 03	8.80E 03	
21 A 020*	P		NAPHTHALENE	T	1.30E 05	1.30E 03	8.80E 03	
16 A 161			1,2,4-TRICHLOROBENZENE	T	1.30E 05	1.30E 03	8.80E 03	
01 B 220		W	DICYCLOPENTADIENE	T	1.30E 05	1.30E 03	8.80E 03	
20 A 103			2,6-DINITROPHENOL	T	1.30E 05	1.30E 03	8.80E 03	
10 C 220		W	2-AMINONAPHTHALENE	T	1.30E 05	1.30E 03	8.80E 03	
20 A 100		W	DINITROPHENOLS	T	1.30E 05	1.30E 03	8.80E 03	
16 A 061			1,2-DIBROMOBENZENE	T	1.30E 05	1.30E 03	8.80E 03	
16 B 020		W	A-CHLOROTOLUENE	T	1.30E 05	1.30E 03	8.80E 03	
16 B 040			BIS(CHLOROMETHYL)BENZENES	T	1.30E 05	1.30E 03	8.80E 03	

GASIFIER ASH SLUICE WATER, ECOLOGY IMPACT

DMEG NO.			COMPOUND NAME	TYPE	CONC E-6 G/L	DS	WDS G/S	LCCAT
16 B 041			1,2-BIS(CHLOROMETHYBENZENE	T	1.30E 05	1.30E 03	8.80E 03	
16 B 042			1,3-BIS(CHLOROMETHYL)BENZENE	T	1.30E 05	1.30E 03	8.80E 03	
16 A 060			DIBROMOBENZENES	T	1.30E 05	1.30E 03	8.80E 03	
16 A 140*	P		1,4-DICHLOROBENZENE	T	1.30E 05	1.30E 03	8.80E 03	
20 A 102			2,5-DINITROPHENOL	T	1.30E 05	1.30E 03	8.80E 03	
48 A 010			PHOSPHORUS	S	4.00E 02	8.00E 02	5.60E 03	
20 A 040			3-NITROPHENOL	T	1.30E 05	2.51E 02	1.80E 03	
18 B 020		W	CATECHOL	T	1.30E 05	2.51E 02	1.80E 03	
20 B 020*	P	W	4,6-DINITRO-O-CRESOL	T	1.30E 05	2.51E 02	1.80E 03	
19 A 020*	P		2-CHLOROPHENOL	T	1.30E 05	2.51E 02	1.80E 03	
18 A 183			2,6-DIMETHYL-4-HEPTYL PHENOL	T	1.30E 05	2.51E 02	1.80E 03	
18 A 120		W	2,2'-DIHYDROXYDIPHENYL	T	1.30E 05	2.51E 02	1.80E 03	
18 C 081			1-INDANOL	T	1.30E 05	2.51E 02	1.80E 03	
18 C 082			4-INDANOL	T	1.30E 05	2.51E 02	1.80E 03	
18 B 080		W	1,2,3-TRIHYDROXYBENZENE	T	1.30E 05	2.51E 02	1.80E 03	
18 A 142*	P		2,4-XYLENOL	T	1.30E 05	2.51E 02	1.80E 03	
18 A 080		W	ETHYLPHENOLS	T	1.30E 05	2.51E 02	1.80E 03	
19 A 040*	P		2,4-DICHLOROPHENOL	T	1.30E 05	2.51E 02	1.80E 03	
20 A 020*	P		2-NITROPHENOL	T	1.30E 05	2.51E 02	1.80E 03	
20 A 120			2,4,6-TRINITROPHENOL	T	1.30E 05	2.51E 02	1.80E 03	
18 A 145			3,5-XYLENOL	T	1.30E 05	2.51E 02	1.80E 03	
20 A 060*	P		4-NITROPHENOL	T	1.30E 05	2.51E 02	1.80E 03	
18 A 160		W	ETHYL CRESOLS	T	1.30E 05	2.51E 02	1.80E 03	
18 A 040		W	CRESOLS	T	1.30E 05	2.51E 02	1.80E 03	
18 A 041			M-CRESOL	T	1.30E 05	2.51E 02	1.80E 03	
18 A 042			O-CRESOL	T	1.30E 05	2.51E 02	1.80E 03	
18 A 043			P-CRESOL	T	1.30E 05	2.51E 02	1.80E 03	
23 B 080		W	ACRIDINE	T	1.30E 05	2.51E 02	1.80E 03	
18 A 060		W	2-METHOXYPHENOL	T	1.30E 05	2.51E 02	1.80E 03	
18 A 081			O-ETHYLPHENOL	T	1.30E 05	2.51E 02	1.80E 03	
19 B 023			CHLORINATED-P-CRESOLS	T	1.30E 05	2.51E 02	1.80E 03	
18 A 144			2,6-XYLENOL	T	1.30E 05	2.51E 02	1.80E 03	
18 A 100		W	PHENYLPHENOLS	T	1.30E 05	2.51E 02	1.80E 03	
18 A 101			O-PHENYLPHENOL	T	1.30E 05	2.51E 02	1.80E 03	

GASIFIER ASH SLUICE WATER, ECOLOGY IMPACT

DMEG NO.			COMPOUND NAME	TYPE	CONC E-6 G/L	DS	WDS G/S	LCCAT
18 A 102			P-PHENYLPHENOL	T	1.30E 05	2.51E 02	1.80E 03	
18 A 103			M-PHENYLPHENOL	T	1.30E 05	2.51E 02	1.80E 03	
18 C 080		W	INDANOLS	T	1.30E 05	2.51E 02	1.80E 03	
18 A 140		W	XYLENOLS	T	1.30E 05	2.51E 02	1.80E 03	
18 C 083			5-INDANOL	T	1.30E 05	2.51E 02	1.80E 03	
18 A 141			2,3-XYLENOL	T	1.30E 05	2.51E 02	1.80E 03	
18 A 181			2,4,6-TRIMETHYL METHYL PHENOL	T	1.30E 05	2.51E 02	1.80E 03	
18 A 161			6-ETHYL-M-CRESOL	T	1.30E 05	2.51E 02	1.80E 03	
18 A 162			4-ETHYL-O-CRESOL	T	1.30E 05	2.51E 02	1.80E 03	
18 A 143			2,5-XYLENOL	T	1.30E 05	2.51E 02	1.80E 03	
18 B 060		W	1,4-DIHYDROXYBENZENE	T	1.30E 05	2.51E 02	1.80E 03	
18 A 146			3,4-XYLENOL	T	1.30E 05	2.51E 02	1.80E 03	
18 C 020		W	1-NAPHTHOL	T	1.30E 05	2.51E 02	1.80E 03	
18 C 040		W	2-NAPHTHOL	T	1.30E 05	2.51E 02	1.80E 03	
18 A 182			4,6-DI-TERT-BUTYL-M-CRESOL	T	1.30E 05	2.51E 02	1.80E 03	
18 A 163			2-ETHYL-P-CRESOL	T	1.30E 05	2.51E 02	1.80E 03	
18 A 180		W	POLYALKYLPHENOLS (MW>135)	T	1.30E 05	2.51E 02	1.80E 03	
18 A 083			P-ETHYLPHENOL	T	1.30E 05	2.51E 02	1.80E 03	
18 B 040		W	1,3-DIHYDROXYBENZENE	T	1.30E 05	2.51E 02	1.80E 03	
19 B 021			CHLORINATED-O-CRESOLS	T	1.30E 05	2.51E 02	1.80E 03	
19 B 022*	P		CHLORINATED-M-CRESOLS	T	1.30E 05	2.51E 02	1.80E 03	
19 B 020		W	CHLORINATED CRESOLS	T	1.30E 05	2.51E 02	1.80E 03	
20 B 041			3,5-DINITRO-P-CRESOL	T	1.30E 05	2.51E 02	1.80E 03	
20 B 042			2,6-DINITRO-P-CRESOL	T	1.30E 05	2.51E 02	1.80E 03	
18 A 082			M-ETHYLPHENOL	T	1.30E 05	2.51E 02	1.80E 03	
20 B 040		W	DINITRO-P-CRESOLS	T	1.30E 05	2.51E 02	1.80E 03	
15 A 040*	P	W	TOLUENE	T	1.30E 05	2.51E 02	1.80E 03	
17 A 085			2,5-DINITROTOLUENE	T	1.30E 05	1.30E 02	8.80E 02	
08 D 142			SEC-AMYL ACETATE	T	1.30E 05	1.30E 02	8.80E 02	
08 D 143			ISOAMYL ACETATE	T	1.30E 05	1.30E 02	8.80E 02	
17 A 083			2,3-DINITROTOLUENE	T	1.30E 05	1.30E 02	8.80E 02	
02 A 340*	P		DICHLOROPROPANES	T	1.30E 05	1.30E 02	8.80E 02	
02 B 100*	P	W	DICHLOROPROPENES	T	1.30E 05	1.30E 02	8.80E 02	
02 B 080*	P	W	TETRACHLOROETHENE	T	1.30E 05	1.30E 02	8.80E 02	

GASIFIER ASH SLUICE WATER, ECOLOGY IMPACT

DMEG NO.			COMPOUND NAME	TYPE	CONC E-6 G/L	DS	WDS G/S	LCCAT
17 A 086			3,5-DINITROTOLUENE	T	1.30E 05	1.30E 02	8.80E 02	
15 B 082			M-XYLENE	T	1.30E 05	1.30E 02	8.80E 02	
02 B 103			CIS-1,3-DICHLOROPROPENE	T	1.30E 05	1.30E 02	8.80E 02	
08 A 040		W	ACETIC ACID	T	1.30E 05	1.30E 02	8.80E 02	
10 A 080		W	1,2-DIAMINOETHANE	T	1.30E 05	1.30E 02	8.80E 02	
17 A 041			2-NITROTOLUENE	T	1.30E 05	1.30E 02	8.80E 02	
02 A 343			1,3-DICHLOROPROPANE	T	1.30E 05	1.30E 02	8.80E 02	
15 A 060*	P	W	ETHYL BENZENE	T	1.30E 05	1.30E 02	8.80E 02	
17 A 082			3,4-DINITROTOLUENE	T	1.30E 05	1.30E 02	8.80E 02	
08 D 141			N-AMYL ACETATE	T	1.30E 05	1.30E 02	8.80E 02	
15 B 081			O-XYLENE	T	1.30E 05	1.30E 02	8.80E 02	
15 B 083			P-XYLENE	T	1.30E 05	1.30E 02	8.80E 02	
17 A 040		W	NITROTOLUENES	T	1.30E 05	1.30E 02	8.80E 02	
17 A 042			3-NITROTOLUENE	T	1.30E 05	1.30E 02	8.80E 02	
17 A 020*	P	W	NITROBENZENE	T	1.30E 05	1.30E 02	8.80E 02	
17 A 043			4-NITROTOLUENE	T	1.30E 05	1.30E 02	8.80E 02	
17 A 080		W	DINITROTOLUENES	T	1.30E 05	1.30E 02	8.80E 02	
15 B 106			1,4-DI-TERT-BUTYL BENZENE	T	1.30E 05	1.30E 02	8.80E 02	
15 B 120		W	TETRAHYDRONAPHTHALENE	T	1.30E 05	1.30E 02	8.80E 02	
17 A 084*	P		2,4-DINITROTOLUENE	T	1.30E 05	1.30E 02	8.80E 02	
10 C 020			ANILINE	T	1.30E 05	1.30E 02	8.80E 02	
15 B 080		W	XYLENES	T	1.30E 05	1.30E 02	8.80E 02	
08 D 123			ISOBUTYL ACETATE	T	1.30E 05	1.30E 02	8.80E 02	
08 D 140			AMYL ACETATES	T	1.30E 05	1.30E 02	8.80E 02	
15 B 105			M-DIISOPROPYL BENZENE	T	1.30E 05	1.30E 02	8.80E 02	
15 B 101			O-DIETHYL BENZENE	T	1.30E 05	1.30E 02	8.80E 02	
04 A 060		W	1-CHLORO-1,3-EPOXYPROPANE	T	1.30E 05	1.30E 02	8.80E 02	
15 B 102			M-DIETHYL BENZENE	T	1.30E 05	1.30E 02	8.80E 02	
08 D 120			BUTYL ACETATES	T	1.30E 05	1.30E 02	8.80E 02	
17 A 081*	P		2,6-DINITROTOLUENE	T	1.30E 05	1.30E 02	8.80E 02	
15 A 100		W	PROPYL BENZENE	T	1.30E 05	1.30E 02	8.80E 02	
02 B 104			TRANS-1,3-DICHLOROPROPENE	T	1.30E 05	1.30E 02	8.80E 02	
08 D 121			N-BUTYL ACETATE	T	1.30E 05	1.30E 02	8.80E 02	
08 D 122			SEC-BUTYL ACETATE	T	1.30E 05	1.30E 02	8.80E 02	

GASIFIER ASH SLUICE WATER, ECOLOGY IMPACT

DMEG NO.		COMPOUND NAME	TYPE	CONC E-6 G/L	OS	NDS G/S	LCCAT
15 B 103		P-DIETHYL BENZENE	T	1.30E 05	1.30E 02	8.80E 02	
15 B 104		O-DIISOPROPYL BENZENE	T	1.30E 05	1.30E 02	8.80E 02	
04 A 050	W	EPICHLORHYDRIN	T	1.30E 05	1.30E 02	8.80E 02	
15 B 100	W	DIALKYL BENZENES (MW:134-191)	T	1.30E 05	1.30E 02	8.80E 02	
15 A 080	W	STYRENE	T	1.30E 05	1.30E 02	8.80E 02	
15 A 120	W	ISOPROPYL BENZENE	T	1.30E 05	1.30E 02	8.80E 02	
04 A 040	W	2-CHLORO-1,2-EPOXYPROPANE	T	1.30E 05	1.30E 02	8.80E 02	
47 A 060	P	AMMONIA	T	1.30E 05	1.30E 02	8.80E 02	
15 B 020		INDAN	D	5.40E 03	1.10E 02	7.60E 02	
08 A 080		VALERIC ACID	T	1.30E 05	9.00E 01	6.30E 02	
09 B 042		B-NAPHTHONITRILES	T	1.30E 05	1.63E 01	1.14E 02	
09 B 040	W	NAPHTHONITRILES	T	1.30E 05	1.61E 01	1.12E 02	
09 B 020	W	BENZONITRILE	T	1.30E 05	1.61E 01	1.12E 02	
09 B 041		A-NAPHTHONITRILES	T	1.30E 05	1.61E 01	1.12E 02	
08 A 104		LAURIC ACID	T	1.30E 05	1.61E 01	1.12E 02	
08 A 103		CAPRIC ACID	T	1.30E 05	1.42E 01	1.00E 02	
08 A 102		CAPRYLIC ACID	T	1.30E 05	1.42E 01	1.00E 02	
08 A 101		CAPROIC ACID	T	1.30E 05	1.42E 01	1.00E 02	
08 A 100		SATURATED LONG CHAIN ACIDS (MW:116-201)	T	1.30E 05	1.42E 01	1.00E 02	
34 A 010		CALCIUM (AS CA+2)	T	1.30E 05	1.42E 01	1.00E 02	
08 A 180		ADIPIC ACID	D	2.20E 05	1.40E 01	9.62E 01	
05 A 120	W	PENTANOLS (PRIMARY)	T	1.30E 05	1.30E 01	9.10E 01	
08 B 060	W	B-PROPIOLACTONE	T	1.30E 05	1.30E 01	8.80E 01	
23 A 062		3-ETHYLPYRIDINE	T	1.30E 05	1.30E 01	8.80E 01	
23 A 120	W	COLLIDINES	T	1.30E 05	1.30E 01	8.80E 01	
17 B 060	W	1-CHLORO-4-NITROBENZENE	T	1.30E 05	1.30E 01	8.80E 01	
23 A 060	W	MONOSUBSTITUTED ALKYL PYRIDINES	T	1.30E 05	1.30E 01	8.80E 01	
05 A 100	W	ISOBUTYL ALCOHOL	T	1.30E 05	1.30E 01	8.80E 01	
08 D 080		METHYL METHACRYLATE	T	1.30E 05	1.30E 01	8.80E 01	
05 A 123		2,2-DIMETHYL-1-PROPANOL	T	1.30E 05	1.30E 01	8.80E 01	
10 A 060		ETHANOLAMINE	T	1.30E 05	1.30E 01	8.80E 01	
15 B 201		1,2,3,4-TETRAMETHYLBENZENE	T	1.30E 05	1.30E 01	8.80E 01	
23 A 082		3-PHENYLPYRIDINE	T	1.30E 05	1.30E 01	8.80E 01	
23 A 121		5-ETHYL-2-METHYLPYRIDINE	T	1.30E 05	1.30E 01	8.80E 01	

GASIFIER ASH SLUICE WATER, ECOLOGY IMPACT

DMEG NO.			COMPOUND NAME	TYPE	CONC E-6 G/L	DS	WDS G/S	LCCAT
05 A 121			N-PENTANOL	T	1.30E 05	1.30E 01	8.80E 01	
08 D 101			N-PROPYL ACETATE	T	1.30E 05	1.30E 01	8.80E 01	
01 A 201			N-OCTANE	T	1.30E 05	1.30E 01	8.80E 01	
23 A 061			2-ETHYLPYRIDINE	T	1.30E 05	1.30E 01	8.80E 01	
10 A 160			CYCLOHEXYLAMINE	T	1.30E 05	1.30E 01	8.80E 01	
23 A 083			4-PHENYLPYRIDINE	T	1.30E 05	1.30E 01	8.80E 01	
23 A 064			4-N-PROPYLPYRIDINE	T	1.30E 05	1.30E 01	8.80E 01	
04 B 080		W	2,2'-DICHLORODIETHYL ETHER	T	1.30E 05	1.30E 01	8.80E 01	
08 D 100			PROPYL ACETATES	T	1.30E 05	1.30E 01	8.80E 01	
23 A 020		W	PYRIDINE	T	1.30E 05	1.30E 01	8.80E 01	
03 B 020			1,4-DIOXANE	T	1.30E 05	1.30E 01	8.80E 01	
10 B 100			MORPHOLINE	T	1.30E 05	1.30E 01	8.80E 01	
23 A 063			4-ETHYLPYRIDINE	T	1.30E 05	1.30E 01	8.80E 01	
15 B 202			1,2,3,5-TETRAMETHYLBENZENE	T	1.30E 05	1.30E 01	8.80E 01	
01 A 200			OCTANES	T	1.30E 05	1.30E 01	8.80E 01	
05 A 124			3-METHYL-1-BUTANOL	T	1.30E 05	1.30E 01	8.80E 01	
04 B 040*	P	W	1,1'-DICHLORODIETHYL ETHER	T	1.30E 05	1.30E 01	8.80E 01	
23 A 080		W	PHENYLPYRIDINES	T	1.30E 05	1.30E 01	8.80E 01	
15 B 203			1,2,4,5-TETRAMETHYLBENZENE	T	1.30E 05	1.30E 01	8.80E 01	
06 A 020		W	ETHYLENE GLYCOL	T	1.30E 05	1.30E 01	8.80E 01	
15 B 200			TETRAMETHYLBENZENES	T	1.30E 05	1.30E 01	8.80E 01	
05 A 122			2-METHYL-1-BUTANOL	T	1.30E 05	1.30E 01	8.80E 01	
17 B 040		W	1-CHLORO-2-NITROBENZENE	T	1.30E 05	1.30E 01	8.80E 01	
05 A 140		W	BENZYL ALCOHOL	T	1.30E 05	1.30E 01	8.80E 01	
23 A 122			2,4,6-COLLIDINE	T	1.30E 05	1.30E 01	8.80E 01	
23 A 081			2-PHENYLPYRIDINE	T	1.30E 05	1.30E 01	8.80E 01	
07 B 100		W	CAMPHOR	T	1.30E 05	1.30E 01	8.80E 01	
38 A 010			ALUMINUM	T	1.30E 05	1.14E 01	8.00E 01	
07 B 120			ACETOPHENONE	D	1.10E 04	1.10E 01	7.70E 01	
08 A 140			OLEIC ACID	T	1.30E 05	7.90E 00	5.50E 01	
72 A 010			IRON (AS FE+2)	T	1.30E 05	6.00E 00	4.20E 01	
82 A 010	P		CADMIUM	D	1.20E 03	4.80E 00	3.40E 01	
76 A 010	P		NICKEL	S	< 2.00E 00<	2.00E 00<	1.40E 01	
05 A 080			N-BUTANOL	S	2.00E 01	2.00E 00	1.40E 01	
				T	1.30E 05	1.30E 00	8.80E 00	

GASIFIER ASH SLUICE WATER, ECOLOGY IMPACT

OMEG NO.				COMPOUND NAME	TYPE	CONC E-6 G/L	DS	WDS G/S	LOCAT
06 A 040				PROPYLENE GLYCOL	T	1.30E 05	1.30E 00	8.80E 00	
08 D 320*	P			BUTYL BENZYL PHTHALATE	T	1.30E 05	1.30E 00	8.80E 00	
05 C 040		W		T-PENTANOL	T	1.30E 05	1.30E 00	8.80E 00	
08 B 080				Y-BUTYROLACTONE	T	1.30E 05	1.30E 00	8.80E 00	
27 A 010				LITHIUM	S	4.00E 02	1.10E 00	7.40E 00	
54 A 010	P			SELENIUM	D	2.00E 01	8.00E-01	5.60E 00	
47 A 080	P			HYDROGEN CYANIDE	D	< 2.00E 01<	8.00E-01<	5.60E 00	
18 A 020	P	W		PHENOL	D	3.60E 02	7.20E-01	5.03E 00	
65 A 010				VANADIUM	D	7.70E 01	5.13E-01	3.60E 00	
81 A 010	P			ZINC	D	4.40E 01	4.40E-01	3.10E 00	
78 A 010	P			COPPER	D	1.70E 01	3.40E-01	2.40E 00	
79 A 010	P			SILVER	S	1.00E 00	2.00E-01	1.40E 00	
37 A 010				BORON	D	4.60E 03	1.84E-01	1.30E 00	
46 A 010	P			LEAD	S	8.00E 00	1.60E-01	1.11E 00	
33 A 010				MAGNESIUM	D	1.10E 04	1.30E-01	8.90E-01	
49 A 010	P			ARSENIC	D	3.30E 00	6.60E-02	4.61E-01	
62 A 010				TITANIUM	D	4.40E 01	5.40E-02	3.80E-01	
36 A 010				BARIUM	D	1.30E 02	5.20E-02	3.64E-01	
69 A 010				MOLYBDENUM	D	3.10E 02	4.42E-02	3.10E-01	
68 A 010	P			CHROMIUM	D	7.00E 00	2.80E-02	2.00E-01	
71 A 010	P			MANGANESE	D	2.00E 00	2.00E-02	1.40E-01	
50 A 010	P			ANTIMONY	D	2.00E 00	1.00E-02	7.00E-02	
74 A 010				COBALT	S	< 2.00E 00<	8.00E-03<	5.60E-02	
83 A 010	P			MERCURY	D	1.40E 00	5.60E-03	3.91E-02	
53 A 010				SULFUR	D	9.70E 05	0.00E-01	0.00E-01	
16 A 100*	P			1,2-DICHLOROBENZENE	T	0.00E-01	0.00E-01	0.00E-01	3
47 A 030				NITRITE, NO2-	D	< 1.00E 01<	0.00E-01<	0.00E-01	
15 A 040*	P	W		TOLUENE	T	0.00E-01	0.00E-01	0.00E-01	3
16 A 020*	P			CHLOROBENZENE	T	0.00E-01	0.00E-01	0.00E-01	3
63 A 010				ZIRCONIUM (AS ZR+4)	S	2.00E 00	0.00E-01	0.00E-01	
47 A 020				NITRATE, NO3-	D	3.00E 03	0.00E-01	0.00E-01	
12 A 040*	P			N-NITROSODIETHYLAMINE	T	0.00E-01	0.00E-01	0.00E-01	6
28 A 010				SODIUM	D	1.70E 06	0.00E-01	0.00E-01	
08 D 280*	P	W		PHTHALATE ESTERS (MW:194-279)	T	0.00E-01	0.00E-01	0.00E-01	5

GASIFIER ASH SLUICE WATER, ECOLOGY IMPACT

DMEG NO.	COMPOUND NAME	TYPE	CONC E-6 G/L	DS	WDS G/S	LCCAT
02 A 140* P	DIBROMOCHLOROMETHANE	T	1.30E 05	0.00E-01	0.00E-01	
15 A 060* P W	ETHYL BENZENE	T	0.00E-01	0.00E-01	0.00E-01	3
12 A 040* P	N-NITROSODIETHYLAMINE	T	1.30E 05	0.00E-01	0.00E-01	
53 A 040	SULFITE, SO3 -2	D	4.70E 04	0.00E-01	0.00E-01	
16 A 140* P	1,4-DICHLOROBENZENE	T	0.00E-01	0.00E-01	0.00E-01	2
12 A 060* P	N-NITROSODIPROPYLAMINE	T	1.30E 05	0.00E-01	0.00E-01	
12 A 020* P	N-NITROSODIMETHYLAMINE	T	0.00E-01	0.00E-01	0.00E-01	6
53 A 030	SULFATE, SO4 -2	D	2.90E 06	0.00E-01	0.00E-01	
16 A 160* P	POLYCHLORINATED BENZENES	T	0.00E-01	0.00E-01	0.00E-01	3
15 A 040* P W	TOLUENE	T	0.00E-01	0.00E-01	0.00E-01	2
17 A 084* P	2,4-DINITROTOLUENE	T	0.00E-01	0.00E-01	0.00E-01	4
17 A 084* P	2,4-DINITROTOLUENE	T	0.00E-01	0.00E-01	0.00E-01	5
15 A 060* P W	ETHYL BENZENE	T	0.00E-01	0.00E-01	0.00E-01	2
02 A 140* P	DIBROMOCHLOROMETHANE	T	0.00E-01	0.00E-01	0.00E-01	2
02 A 160* P	BROMOFORM	T	1.30E 05	0.00E-01	0.00E-01	
02 A 160* P	BROMOFORM	T	0.00E-01	0.00E-01	0.00E-01	1
70 A 010	TUNGSTEN	S	2.00E 01	0.00E-01	0.00E-01	
08 D 300* P	DI-2-ETHYLHEXYL PHTHALATE	T	0.00E-01	0.00E-01	0.00E-01	5
35 A 010	STRONTIUM	D	4.00E 03	0.00E-01	0.00E-01	
02 B 120* P	HEXACHLOROBUTADIENE	T	0.00E-01	0.00E-01	0.00E-01	1
10 C 140* P W	BENZIDINE	T	0.00E-01	0.00E-01	0.00E-01	6
08 D 320* P	BUTYL BENZYL PHTHALATE	T	0.00E-01	0.00E-01	0.00E-01	6
02 A 340* P	DICHLOROPROPANES	T	0.00E-01	0.00E-01	0.00E-01	2
16 A 100* P	1,2-DICHLOROBENZENE	T	0.00E-01	0.00E-01	0.00E-01	2
02 A 140* P	DIBROMOCHLOROMETHANE	T	0.00E-01	0.00E-01	0.00E-01	1
12 A 020* P	N-NITROSODIMETHYLAMINE	T	0.00E-01	0.00E-01	0.00E-01	5
02 B 080* P W	TETRACHLOROETHENE	T	0.00E-01	0.00E-01	0.00E-01	1
02 B 080* P W	TETRACHLOROETHENE	T	0.00E-01	0.00E-01	0.00E-01	2
12 A 040* P	N-NITROSODIETHYLAMINE	T	0.00E-01	0.00E-01	0.00E-01	5
02 B 100* P W	DICHLOROPROPENES	T	0.00E-01	0.00E-01	0.00E-01	1
12 A 020* P	N-NITROSODIMETHYLAMINE	T	1.30E 05	0.00E-01	0.00E-01	
02 B 120* P	HEXACHLOROBUTADIENE	T	1.30E 05	0.00E-01	0.00E-01	
12 A 060* P	N-NITROSODIPROPYLAMINE	T	0.00E-01	0.00E-01	0.00E-01	6
18 A 142* P	2,4-XYLENOL	T	0.00E-01	0.00E-01	0.00E-01	5

GASIFIER ASH SLUICE WATER, ECOLOGY IMPACT

DMEG NO.	COMPOUND NAME	TYPE	CONC E-6 G/L	DS	WDS G/S	LCCAT
18 A 142* P	2,4-XYLENOL	T	0.00E-01	0.00E-01	0.00E-01	6
02 B 120* P	HEXACHLOROBUTADIENE	T	0.00E-01	0.00E-01	0.00E-01	2
02 B 140* P	HEXACHLOROCYCLOPENTADIENE	T	1.30E 05	0.00E-01	0.00E-01	
02 B 140* P	HEXACHLOROCYCLOPENTADIENE	T	0.00E-01	0.00E-01	0.00E-01	1
02 B 140* P	HEXACHLOROCYCLOPENTADIENE	T	0.00E-01	0.00E-01	0.00E-01	2
58 A 010	BROMINE	S	2.00E 01	0.00E-01	0.00E-01	
02 A 160* P	BROMOFORM	T	0.00E-01	0.00E-01	0.00E-01	2
02 A 320* P	HEXACHLOROETHANE	T	1.30E 05	0.00E-01	0.00E-01	
02 B 100* P W	DICHLOROPROPENES	T	0.00E-01	0.00E-01	0.00E-01	2
12 A 060* P	N-NITROSODIPROPYLAMINE	T	0.00E-01	0.00E-01	0.00E-01	5
10 C 140* P W	BENZIDINE	T	0.00E-01	0.00E-01	0.00E-01	5
02 A 340* P	DICHLOROPROPANES	T	0.00E-01	0.00E-01	0.00E-01	1
17 A 020* P W	NITROBENZENE	T	0.00E-01	0.00E-01	0.00E-01	4
17 A 020* P W	NITROBENZENE	T	0.00E-01	0.00E-01	0.00E-01	5
66 A 010	NIOBIUM (AS NB+3)	S	2.00E 00	0.00E-01	0.00E-01	
08 D 280* P W	PHTHALATE ESTERS (MW:194-279)	T	0.00E-01	0.00E-01	0.00E-01	6
84 C 010	PRASEODYMIUM	S	1.00E 00	0.00E-01	0.00E-01	
30 A 010	RUBIDIUM (AS RB+)	S	4.00E 01	0.00E-01	0.00E-01	
43 A 010	SILICON	S	3.00E 02	0.00E-01	0.00E-01	
08 D 300* P	DI-2-ETHYLHEXYL PHTHALATE	T	1.30E 05	0.00E-01	0.00E-01	
17 A 081* P	2,6-DINITROTOLUENE	T	0.00E-01	0.00E-01	0.00E-01	4
08 D 300* P	DI-2-ETHYLHEXYL PHTHALATE	T	0.00E-01	0.00E-01	0.00E-01	6
29 A 010	POTASSIUM	S	> 1.00E 04>	0.00E-01>	0.00E-01	
08 D 320* P	BUTYL BENZYL PHTHALATE	T	0.00E-01	0.00E-01	0.00E-01	5
19 A 020* P	2-CHLOROPHENOL	T	0.00E-01	0.00E-01	0.00E-01	5
19 A 020* P	2-CHLOROPHENOL	T	0.00E-01	0.00E-01	0.00E-01	6
16 A 020* P	CHLOROBENZENE	T	0.00E-01	0.00E-01	0.00E-01	2
19 A 040* P	2,4-DICHLOROPHENOL	T	0.00E-01	0.00E-01	0.00E-01	5
19 A 040* P	2,4-DICHLOROPHENOL	T	0.00E-01	0.00E-01	0.00E-01	6
57 A 010	CHLORINE (AS CL-)	D	7.80E 04	0.00E-01	0.00E-01	
19 A 060* P W	PENTACHLOROPHENOL	T	0.00E-01	0.00E-01	0.00E-01	5
19 A 060* P W	PENTACHLOROPHENOL	T	0.00E-01	0.00E-01	0.00E-01	6
56 A 010	FLUORINE (AS F-)	D	8.70E 02	0.00E-01	0.00E-01	
07 B 080* P	ISOPHORONE	T	1.30E 05	0.00E-01	0.00E-01	

GASIFIER ASH SLUICE WATER, ECOLOGY IMPACT

DMEG NO.	COMPOUND NAME	TYPE	CONC E-6 G/L	DS	WDS G/S	LCCAT
02 A 320* P	HEXACHLOROETHANE	T	0.00E-01	0.00E-01	0.00E-01	2
19 B 022* P	CHLORINATED-M-CRESOLS	T	0.00E-01	0.00E-01	0.00E-01	5
19 B 022* P	CHLORINATED-M-CRESOLS	T	0.00E-01	0.00E-01	0.00E-01	6
07 B 080* P	ISOPHORONE	T	0.00E-01	0.00E-01	0.00E-01	5
07 B 080* P	ISOPHORONE	T	0.00E-01	0.00E-01	0.00E-01	6
20 A 020* P	2-NITROPHENOL	T	0.00E-01	0.00E-01	0.00E-01	5
20 A 020* P	2-NITROPHENOL	T	0.00E-01	0.00E-01	0.00E-01	6
16 A 120* P	1,3-DICHLOROBENZENE	T	0.00E-01	0.00E-01	0.00E-01	2
16 A 120* P	1,3-DICHLOROBENZENE	T	0.00E-01	0.00E-01	0.00E-01	3
20 A 060* P	4-NITROPHENOL	T	0.00E-01	0.00E-01	0.00E-01	5
20 A 060* P	4-NITROPHENOL	T	0.00E-01	0.00E-01	0.00E-01	6
16 A 140* P	1,4-DICHLOROBENZENE	T	0.00E-01	0.00E-01	0.00E-01	3
48 A 020	PHOSPHATE, PO4 -3	D	< 1.00E 02<	0.00E-01<	0.00E-01	
16 A 160* P	POLYCHLORINATED BENZENES	T	0.00E-01	0.00E-01	0.00E-01	2
20 A 101* P	2,4-DINITROPHENOL	T	0.00E-01	0.00E-01	0.00E-01	5
20 A 101* P	2,4-DINITROPHENOL	T	0.00E-01	0.00E-01	0.00E-01	6
45 A 010	TIN	D	3.00E 03	0.00E-01	0.00E-01	
16 A 200* P	CHLORONAPHTHALENES	T	1.30E 05	0.00E-01	0.00E-01	
16 A 200* P	CHLORONAPHTHALENES	T	0.00E-01	0.00E-01	0.00E-01	2
16 A 200* P	CHLORONAPHTHALENES	T	0.00E-01	0.00E-01	0.00E-01	3
20 B 020* P W	4,6-DINITRO-O-CRESOL	T	0.00E-01	0.00E-01	0.00E-01	5
20 B 020* P W	4,6-DINITRO-O-CRESOL	T	0.00E-01	0.00E-01	0.00E-01	6
84 B 010	CERIUM	S	2.00E 00	0.00E-01	0.00E-01	
02 A 320* P	HEXACHLOROETHANE	T	0.00E-01	0.00E-01	0.00E-01	1
39 A 010	GALLIUM	S	8.00E 00	0.00E-01	0.00E-01	
84 A 010	LANTHANUM	S	< 1.00E 00<	0.00E-01<	0.00E-01	
21 A 020* P	NAPHTHALENE	T	0.00E-01	0.00E-01	0.00E-01	2
21 A 020* P	NAPHTHALENE	T	0.00E-01	0.00E-01	0.00E-01	3
21 A 100* PH	ACENAPHTHENE	T	1.30E 05	0.00E-01	0.00E-01	
21 A 100* PH	ACENAPHTHENE	T	0.00E-01	0.00E-01	0.00E-01	2
21 A 100* PH	ACENAPHTHENE	T	0.00E-01	0.00E-01	0.00E-01	3
21 A 120* PH	ACENAPHTHYLENE	T	1.30E 05	0.00E-01	0.00E-01	
21 A 120* PH	ACENAPHTHYLENE	T	0.00E-01	0.00E-01	0.00E-01	2
21 A 120* PH	ACENAPHTHYLENE	T	0.00E-01	0.00E-01	0.00E-01	3

GASIFIER ASH SLUICE WATER, ECOLOGY IMPACT

DMEG NO.	COMPOUND NAME	TYPE	CONC E-6 G/L	DS	WDS G/S	LCCAT
21 A 140* P	ANTHRACENE	T	1.30E 05	0.00E-01	0.00E-01	
21 A 140* P	ANTHRACENE	T	0.00E-01	0.00E-01	0.00E-01	2
17 A 081* P	2,6-DINITROTOLUENE	T	0.00E-01	0.00E-01	0.00E-01	5
21 A 180* P	PHENANTHRENE	T	1.30E 05	0.00E-01	0.00E-01	
21 A 180* P	PHENANTHRENE	T	0.00E-01	0.00E-01	0.00E-01	2
21 A 180* P	PHENANTHRENE	T	0.00E-01	0.00E-01	0.00E-01	3
21 B 040* P	BENZ(A)ANTHRACENE	T	1.30E 05	0.00E-01	0.00E-01	
21 B 040* P	BENZ(A)ANTHRACENE	T	0.00E-01	0.00E-01	0.00E-01	2
21 B 040* P	BENZ(A)ANTHRACENE	T	0.00E-01	0.00E-01	0.00E-01	3
21 B 120* P	CHRYSENE	T	1.30E 05	0.00E-01	0.00E-01	
21 B 120* P	CHRYSENE	T	0.00E-01	0.00E-01	0.00E-01	2
21 B 120* P	CHRYSENE	T	0.00E-01	0.00E-01	0.00E-01	3
21 B 180* P	PYRENE	T	1.30E 05	0.00E-01	0.00E-01	
21 B 180* P	PYRENE	T	0.00E-01	0.00E-01	0.00E-01	2
21 B 180* P	PYRENE	T	0.00E-01	0.00E-01	0.00E-01	3
21 C 080* P	DIBENZ(A,H)ANTHRACENE	T	1.30E 05	0.00E-01	0.00E-01	
21 C 080* P	DIBENZ(A,H)ANTHRACENE	T	0.00E-01	0.00E-01	0.00E-01	2
21 C 080* P	DIBENZ(A,H)ANTHRACENE	T	0.00E-01	0.00E-01	0.00E-01	3
21 C 100* P	BENZO(A)PYRENE	T	1.30E 05	0.00E-01	0.00E-01	
21 C 100* P	BENZO(A)PYRENE	T	0.00E-01	0.00E-01	0.00E-01	2
21 C 100* P	BENZO(A)PYRENE	T	0.00E-01	0.00E-01	0.00E-01	3
21 D 080* PH	BENZO(GHI)PERYLENE	T	1.30E 05	0.00E-01	0.00E-01	
21 D 080* PH	BENZO(GHI)PERYLENE	T	0.00E-01	0.00E-01	0.00E-01	2
21 D 080* PH	BENZO(GHI)PERYLENE	T	0.00E-01	0.00E-01	0.00E-01	3
22 A 020* PH	FLUORENE	T	1.30E 05	0.00E-01	0.00E-01	
22 A 020* PH	FLUORENE	T	0.00E-01	0.00E-01	0.00E-01	2
22 A 020* PH	FLUORENE	T	0.00E-01	0.00E-01	0.00E-01	3
22 B 040* P	FLUORANTHENE	T	1.30E 05	0.00E-01	0.00E-01	
22 B 040* P	FLUORANTHENE	T	0.00E-01	0.00E-01	0.00E-01	2
22 B 040* P	FLUORANTHENE	T	0.00E-01	0.00E-01	0.00E-01	3
22 C 020* P	BENZO(K)FLUORANTHENE	T	1.30E 05	0.00E-01	0.00E-01	
22 C 020* P	BENZO(K)FLUORANTHENE	T	0.00E-01	0.00E-01	0.00E-01	2
22 C 020* P	BENZO(K)FLUORANTHENE	T	0.00E-01	0.00E-01	0.00E-01	3
22 C 080* P	BENZO(B)FLUORANTHENE	T	1.30E 05	0.00E-01	0.00E-01	

GASIFIER ASH SLUICE WATER, ECOLOGY IMPACT

DMEG NO.	COMPOUND NAME	TYPE	CONC E-6 G/L	DS	WDS G/S	LCCAT
22 C 080* P	BENZO(B)FLUORANTHENE	T	0.00E-01	0.00E-01	0.00E-01	2
22 C 080* P	BENZO(B)FLUORANTHENE	T	0.00E-01	0.00E-01	0.00E-01	3
22 D 020* P	INDENO(1,2,3-CD)PYRENE	T	1.30E 05	0.00E-01	0.00E-01	
22 D 020* P	INDENO(1,2,3-CD)PYRENE	T	0.00E-01	0.00E-01	0.00E-01	2
22 D 020* P	INDENO(1,2,3-CD)PYRENE	T	0.00E-01	0.00E-01	0.00E-01	3
04 A 140* P	2-CHLOROETHYL VINYL ETHER	T	1.30E 05	0.00E-01	0.00E-01	
04 A 140* P	2-CHLOROETHYL VINYL ETHER	T	0.00E-01	0.00E-01	0.00E-01	4
04 A 140* P	2-CHLOROETHYL VINYL ETHER	T	0.00E-01	0.00E-01	0.00E-01	5
04 A 160* P	A-CHLOROBUTYL ETHYL ETHER	T	1.30E 05	0.00E-01	0.00E-01	
04 A 160* P	A-CHLOROBUTYL ETHYL ETHER	T	0.00E-01	0.00E-01	0.00E-01	4
04 A 160* P	A-CHLOROBUTYL ETHYL ETHER	T	0.00E-01	0.00E-01	0.00E-01	5
04 A 180* P	CHLOROPHENYL PHENYL ETHER	T	1.30E 05	0.00E-01	0.00E-01	
04 A 180* P	CHLOROPHENYL PHENYL ETHER	T	0.00E-01	0.00E-01	0.00E-01	4
04 A 180* P	CHLOROPHENYL PHENYL ETHER	T	0.00E-01	0.00E-01	0.00E-01	5
04 B 020* P	1,1'-DICHLOROMETHYL ETHER	T	1.30E 05	0.00E-01	0.00E-01	
04 B 020* P	1,1'-DICHLOROMETHYL ETHER	T	0.00E-01	0.00E-01	0.00E-01	4
04 B 020* P	1,1'-DICHLOROMETHYL ETHER	T	0.00E-01	0.00E-01	0.00E-01	5
21 A 140* P	ANTHRACENE	T	0.00E-01	0.00E-01	0.00E-01	3
04 B 040* P W	1,1'-DICHLORODIETHYL ETHER	T	0.00E-01	0.00E-01	0.00E-01	4
04 B 040* P W	1,1'-DICHLORODIETHYL ETHER	T	0.00E-01	0.00E-01	0.00E-01	5

CYCLONE DUST QUENCH WATER

APPROXIMATE FLOW RATE = 7.0 (0.007 L/S)

TOTAL ORGANIC LOADING = 59.9 MG/L

ORGANIC LOADING

59500.0

FLOW RATE = 7.00

MINIMUM DISCHARGE SEVERITY = .010

STATE: LIQUID, UNITS IN MICROGRAMS/L

IMPACT: HEALTH

EXPERIMENTALY DETERMINED DATA

SPARK SOURCE DATA

CYCLONE DUST QUENCH WATER, HEALTH IMPACT

DMEG NO.			COMPOUND NAME	TYPE	CONC E-6 G/L	DS	WDS G/S	LCCAT
16 A 220		W	POLYCHLORINATED BIPHENYLS	T	6.00E 04	1.20E 07	8.33E 07	
21 C 100*	P	W	BENZO(A)PYRENE	T	6.00E 04	2.00E 05	1.40E 06	
21 C 080*	P		DIBENZ(A,H)ANTHRACENE	T	6.00E 04	4.30E 04	3.00E 05	
18 B 040		W	1,3-DIHYDROXYBENZENE	T	6.00E 04	1.20E 04	8.33E 04	
18 B 060		W	1,4-DIHYDROXYBENZENE	T	6.00E 04	1.20E 04	8.33E 04	
18 A 183			2,6-DIMETHYL-4-HEPTYL PHENOL	T	6.00E 04	1.20E 04	8.33E 04	
18 B 020		W	CATECHOL	T	6.00E 04	1.20E 04	8.33E 04	
18 C 040		W	2-NAPHTHOL	T	6.00E 04	1.20E 04	8.33E 04	
18 A 182			4,6-DI-TERT-BUTYL-M-CRESOL	T	6.00E 04	1.20E 04	8.33E 04	
18 C 081			1-INDANOL	T	6.00E 04	1.20E 04	8.33E 04	
18 C 082			4-INDANOL	T	6.00E 04	1.20E 04	8.33E 04	
18 C 083			5-INDANOL	T	6.00E 04	1.20E 04	8.33E 04	
19 A 020*	P	W	2-CHLOROPHENOL	T	6.00E 04	1.20E 04	8.33E 04	
18 B 080		W	1,2,3-TRIHYDROXYBENZENE	T	6.00E 04	1.20E 04	8.33E 04	
18 A 083			P-ETHYLPHENOL	T	6.00E 04	1.20E 04	8.33E 04	
19 A 040*	P	W	2,4-DICHLOROPHENOL	T	6.00E 04	1.20E 04	8.33E 04	
18 C 080		W	INDANOLS	T	6.00E 04	1.20E 04	8.33E 04	
18 A 102			P-PHENYLPHENOL	T	6.00E 04	1.20E 04	8.33E 04	
19 A 060*	P	W	PENTACHLOROPHENOL	T	6.00E 04	1.20E 04	8.33E 04	
18 A 120		W	2,2'-DIHYDROXYDIPHENYL	T	6.00E 04	1.20E 04	8.33E 04	
18 A 140		W	XYLENOLS	T	6.00E 04	1.20E 04	8.33E 04	
19 B 020		W	CHLORINATED CRESOLS	T	6.00E 04	1.20E 04	8.33E 04	
19 B 021			CHLORINATED-O-CRESOLS	T	6.00E 04	1.20E 04	8.33E 04	
19 B 022*	P		CHLORINATED-M-CRESOLS	T	6.00E 04	1.20E 04	8.33E 04	
18 A 041			M-CRESOL	T	6.00E 04	1.20E 04	8.33E 04	
18 A 143			2,5-XYLENOL	T	6.00E 04	1.20E 04	8.33E 04	
19 B 023			CHLORINATED-P-CRESOLS	T	6.00E 04	1.20E 04	8.33E 04	
20 A 020*	P	W	2-NITROPHENOL	T	6.00E 04	1.20E 04	8.33E 04	
18 A 146			3,4-XYLENOL	T	6.00E 04	1.20E 04	8.33E 04	
18 A 160		W	ETHYL CRESOLS	T	6.00E 04	1.20E 04	8.33E 04	
18 A 082			M-ETHYLPHENOL	T	6.00E 04	1.20E 04	8.33E 04	
20 A 060*	P	W	4-NITROPHENOL	T	6.00E 04	1.20E 04	8.33E 04	
18 A 163			2-ETHYL-P-CRESOL	T	6.00E 04	1.20E 04	8.33E 04	
18 A 101			O-PHENYLPHENOL	T	6.00E 04	1.20E 04	8.33E 04	

CYCLONE DUST QUENCH WATER, HEALTH IMPACT

DMEG NO.				COMPOUND NAME	TYPE	CONC E-6 G/L	DS	WDS G/S	LCCAT
20 A 080		W		2-AMINO-4,6-DINITROPHENOL	T	6.00E 04	1.20E 04	8.33E 04	
20 A 100		W		DINITROPHENOLS	T	6.00E 04	1.20E 04	8.33E 04	
20 A 101*	P			2,4-DINITROPHENOL	T	6.00E 04	1.20E 04	8.33E 04	
18 A 020*	P	W		PHENOL	T	6.00E 04	1.20E 04	8.33E 04	
18 A 141				2,3-XYLENOL	T	6.00E 04	1.20E 04	8.33E 04	
20 A 102				2,5-DINITROPHENOL	T	6.00E 04	1.20E 04	8.33E 04	
18 A 040		W		CRESOLS	T	6.00E 04	1.20E 04	8.33E 04	
18 C 020		W		1-NAPHTHOL	T	6.00E 04	1.20E 04	8.33E 04	
18 A 042				O-CRESOL	T	6.00E 04	1.20E 04	8.33E 04	
18 A 043				P-CRESOL	T	6.00E 04	1.20E 04	8.33E 04	
18 A 060		W		2-METHOXYPHENOL	T	6.00E 04	1.20E 04	8.33E 04	
18 A 080		W		ETHYLPHENOLS	T	6.00E 04	1.20E 04	8.33E 04	
18 A 081				O-ETHYLPHENOL	T	6.00E 04	1.20E 04	8.33E 04	
20 B 041				3,5-DINITRO-P-CRESOL	T	6.00E 04	1.20E 04	8.33E 04	
20 B 042				2,6-DINITRO-P-CRESOL	T	6.00E 04	1.20E 04	8.33E 04	
18 A 100		W		PHENYLPHENOLS	T	6.00E 04	1.20E 04	8.33E 04	
18 A 180		W		POLYALKYLPHENOLS (MW>135)	T	6.00E 04	1.20E 04	8.33E 04	
18 A 181				2,4,6-TRIMETHYL METHYL PHENOL	T	6.00E 04	1.20E 04	8.33E 04	
18 A 103				M-PHENYLPHENOL	T	6.00E 04	1.20E 04	8.33E 04	
18 A 145				3,5-XYLENOL	T	6.00E 04	1.20E 04	8.33E 04	
20 A 103				2,6-DINITROPHENOL	T	6.00E 04	1.20E 04	8.33E 04	
20 B 040		W		DINITRO-P-CRESOLS	T	6.00E 04	1.20E 04	8.33E 04	
18 A 142*	P			2,4-XYLENOL	T	6.00E 04	1.20E 04	8.33E 04	
18 A 162				4-ETHYL-O-CRESOL	T	6.00E 04	1.20E 04	8.33E 04	
20 A 040		W		3-NITROPHENOL	T	6.00E 04	1.20E 04	8.33E 04	
20 A 120		W		2,4,6-TRINITROPHENOL	T	6.00E 04	1.20E 04	8.33E 04	
18 A 144				2,6-XYLENOL	T	6.00E 04	1.20E 04	8.33E 04	
20 B 020*	P	W		4,6-DINITRO-O-CRESOL	T	6.00E 04	1.20E 04	8.33E 04	
18 A 161				6-ETHYL-M-CRESOL	T	6.00E 04	1.20E 04	8.33E 04	
02 A 380		W		HEXACHLOROCYCLOHEXANE	T	6.00E 04	1.20E 04	8.33E 04	
21 B 080				3-METHYLCHOLANTHRENE	T	6.00E 04	3.00E 03	2.10E 04	
04 B 020*	P	W		1,1'-DICHLOROMETHYL ETHER	T	6.00E 04	1.10E 03	7.43E 03	
21 D 040		W		DIBENZO(A,I)PYRENE	T	6.00E 04	7.93E 02	5.60E 03	
21 B 040*	P			BENZ(A)ANTHRACENE	T	6.00E 04	9.20E 01	6.40E 02	
					T	6.00E 04	8.90E 01	6.21E 02	

CYCLONE DUST QUENCH WATER, HEALTH IMPACT

DMEG NO.		COMPOUND NAME	TYPE	CONC E-6 G/L	DS	WDS G/S	LCCAT
12 A 020*	P W	N-NITROSODIMETHYLAMINE	T	6.00E 04	6.00E 01	4.20E 02	
10 C 100		1,4-DIAMINOBENZENE	T	6.00E 04	4.00E 01	2.80E 02	
23 C 160	W	DIBENZO(C,G)CARBAZOLE	T	6.00E 04	4.00E 01	2.80E 02	
02 B 140*	P W	HEXACHLOROCYCLOPENTADIENE	T	6.00E 04	3.71E 01	2.60E 02	
10 C 040		AMINOTOLUENES	T	6.00E 04	3.50E 01	2.50E 02	
10 C 043		4-AMINOTOLUENE	T	6.00E 04	3.50E 01	2.50E 02	
10 C 042		3-AMINOTOLUENE	T	6.00E 04	3.50E 01	2.50E 02	
10 C 041		2-AMINOTOLUENE	T	6.00E 04	3.50E 01	2.50E 02	
12 A 040*	P	N-NITROSODIETHYLAMINE	T	6.00E 04	3.30E 01	2.31E 02	
23 B 100	W	DIHYDROACRIDINE	T	6.00E 04	2.40E 01	1.70E 02	
10 C 220		2-AMINONAPHTHALENE	T	6.00E 04	2.40E 01	1.70E 02	
21 B 108		ISOPROPYL BENZO(C)PHENANTHRENE	T	6.00E 04	1.80E 01	1.22E 02	
21 B 103		2-METHYL BENZO(C)PHENANTHRENE	T	6.00E 04	1.80E 01	1.22E 02	
21 B 100		BENZO(C)PHENANTHRENE & ALKYL DERIVATIVES	T	6.00E 04	1.80E 01	1.22E 02	
23 B 240		DIBENZ(A,H)ACRIDINE	T	6.00E 04	1.80E 01	1.22E 02	
21 B 109		6-ETHYL BENZO(C)PHENANTHRENE	T	6.00E 04	1.80E 01	1.22E 02	
21 B 10A		N-PROPYL BENZO(C)PHENANTHRENE	T	6.00E 04	1.80E 01	1.22E 02	
21 B 101		BENZO(C)PHENANTHRENE	T	6.00E 04	1.80E 01	1.22E 02	
21 B 104		5-METHYL BENZO(C)PHENANTHRENE	T	6.00E 04	1.80E 01	1.22E 02	
21 B 107		8-METHYL BENZO(C)PHENANTHRENE	T	6.00E 04	1.80E 01	1.22E 02	
21 B 108		2-ETHYL BENZO(C)PHENANTHRENE	T	6.00E 04	1.80E 01	1.22E 02	
21 B 106		7-METHYL BENZO(C)PHENANTHRENE	T	6.00E 04	1.80E 01	1.22E 02	
21 B 102		1-METHYL BENZO(C)PHENANTHRENE	T	6.00E 04	1.80E 01	1.22E 02	
21 B 105		6-METHYL BENZO(C)PHENANTHRENE	T	6.00E 04	1.80E 01	1.22E 02	
23 B 220		DIBENZ(A,J)ACRIDINE	T	6.00E 04	1.80E 01	1.22E 02	
08 B 060	W	B-PROPIOLACTONE	T	6.00E 04	1.60E 01	1.12E 02	
10 C 082		M-ANISIDINE	T	6.00E 04	1.23E 01	8.70E 01	
13 A 100	W	BENZENETHIOL	T	6.00E 04	7.93E 00	5.60E 01	
10 C 081		O-ANISIDINE	T	6.00E 04	7.93E 00	5.60E 01	
10 C 080		ANISIDINES	T	6.00E 04	7.93E 00	5.60E 01	
10 C 083		P-ANISIDINE	T	6.00E 04	7.93E 00	5.60E 01	
10 C 200		1-AMINONAPHTHALENE	T	6.00E 04	7.93E 00	5.60E 01	
13 A 140		PERCHLOROMETHANETHIOL	T	6.00E 04	7.00E 00	4.90E 01	
14 B 020	W	DIMETHYL SULFOXIDE	T	6.00E 04	5.00E 00	3.50E 01	
			T	6.00E 04	5.00E 00	3.50E 01	

CYCLONE DUST QUENCH WATER, HEALTH IMPACT

OMEG NO.				COMPOUND NAME	TYPE	CONC E-6 G/L	OS	WDS G/S	LOCAT
22 C 080*	P	W		BENZO(B)FLUORANTHENE	T	6.00E 04	4.60E 00	3.20E 01	
17 B 040		W		1-CHLORO-2-NITROBENZENE	T	6.00E 04	4.00E 00	2.80E 01	
15 A 160		W		BIPHENYL	T	6.00E 04	4.00E 00	2.80E 01	
08 C 060		W		6-HEXANELACTAM	T	6.00E 04	4.00E 00	2.80E 01	
10 C 140*	P			BENZIDINE	T	6.00E 04	4.00E 00	2.80E 01	
17 B 060		W		1-CHLORO-4-NITROBENZENE	T	6.00E 04	4.00E 00	2.80E 01	
08 A 123				STEARIC ACID	T	6.00E 04	3.71E 00	2.60E 01	
08 A 122				PALMITIC ACID	T	6.00E 04	3.71E 00	2.60E 01	
08 A 120		W		SATURATED LONG CHAIN ACIDS (MW:228-285)	T	6.00E 04	3.71E 00	2.60E 01	
08 A 121				MYRISTIC ACID	T	6.00E 04	3.71E 00	2.60E 01	
21 D 060				DIBENZO(A,L)PYRENE	T	6.00E 04	3.71E 00	2.60E 01	
72 A 010				IRON (AS FE+2)	D	4.90E 03	3.30E 00	2.30E 01	
12 B 020		W		N-METHYL-N-NITROSOANILINE	T	6.00E 04	3.13E 00	2.20E 01	
17 A 060		W		4-NITROBIPHENYL	T	6.00E 04	3.00E 00	2.10E 01	
10 C 120				4-AMINOBIPHENYL	T	6.00E 04	3.00E 00	2.10E 01	
02 A 180				DIBROMODICHLOROMETHANE	T	6.00E 04	2.83E 00	2.00E 01	
17 A 081*	P			2,6-DINITROTOLUENE	T	6.00E 04	2.60E 00	1.81E 01	
17 A 083				2,3-DINITROTOLUENE	T	6.00E 04	2.60E 00	1.81E 01	
17 A 082				3,4-DINITROTOLUENE	T	6.00E 04	2.60E 00	1.81E 01	
17 A 085				2,5-DINITROTOLUENE	T	6.00E 04	2.60E 00	1.81E 01	
17 A 086				3,5-DINITROTOLUENE	T	6.00E 04	2.60E 00	1.81E 01	
17 A 084*	P			2,4-DINITROTOLUENE	T	6.00E 04	2.60E 00	1.81E 01	
17 A 080				DINITROTOLUENES	T	6.00E 04	2.60E 00	1.81E 01	
22 C 020*	P			BENZO(K)FLUORANTHENE	T	6.00E 04	2.50E 00	1.73E 01	
22 D 020*	P	W		INDENO(1,2,3-CD)PYRENE	T	6.00E 04	2.50E 00	1.73E 01	
21 A 180*	P	W		PHENANTHRENE	T	6.00E 04	2.50E 00	1.73E 01	
21 B 140				METHYL CHRYSENES	T	6.00E 04	2.20E 00	1.54E 01	
21 B 141				4-METHYL CHRYSENE	T	6.00E 04	2.20E 00	1.54E 01	
21 B 142				5-METHYL CHRYSENE	T	6.00E 04	2.20E 00	1.54E 01	
04 A 060		W		1-CHLORO-1,3-EPOXYPROPANE	T	6.00E 04	2.00E 00	1.40E 01	
04 A 040		W		2-CHLORO-1,2-EPOXYPROPANE	T	6.00E 04	2.00E 00	1.40E 01	
04 A 050		W		EPICHLORHYDRIN	T	6.00E 04	2.00E 00	1.40E 01	
15 B 060		W		4,4'-DIPHENYLBIPHENYL	T	6.00E 04	2.00E 00	1.40E 01	
21 B 120*	P			CHRYSENE	T	6.00E 04	1.80E 00	1.30E 01	

CYCLONE DUST QUENCH WATER, HEALTH IMPACT

DMEG NO.				COMPOUND NAME	TYPE	CONC E-6 G/L	DS	WDS G/S	LCCAT
12 A 060*	P			N-NITROSODIPROPYLAMINE	T	6.00E 04	1.70E 00	1.20E 01	
21 C 160				PICENE	T	6.00E 04	1.60E 00	1.10E 01	
23 C 020				PYRROLE	T	6.00E 04	1.50E 00	1.01E 01	
09 A 120		W		TETRAMETHYLSUCCINONITRILE	T	6.00E 04	1.32E 00	9.30E 00	
21 C 120				BENZO(E)PYRENE	T	6.00E 04	1.30E 00	9.10E 00	
08 A 140				OLEIC ACID	T	6.00E 04	1.20E 00	8.32E 00	
03 B 040		W		1,3-DIOXANE	T	6.00E 04	1.10E 00	7.71E 00	
03 B 020		W		1,4-DIOXANE	T	6.00E 04	1.10E 00	7.71E 00	
21 D 020				DIBENZO(A,H)PYRENE	T	6.00E 04	1.10E 00	7.43E 00	
02 B 120*	P			HEXACHLOROBUTADIENE	T	6.00E 04	9.80E-01	6.82E 00	
23 D 020		W		BENZOTHIAZOLE	T	6.00E 04	9.30E-01	6.50E 00	
23 D 040				METHYL BENZOTHIAZOLE	T	6.00E 04	8.40E-01	5.90E 00	
08 D 280*	P	W		PHTHALATE ESTERS (MW:194-279)	T	6.00E 04	7.93E-01	5.60E 00	
08 D 281				DIMETHYL PHTHALATE	T	6.00E 04	7.93E-01	5.60E 00	
08 D 300*	P			DI-2-ETHYLHEXYL PHTHALATE	T	6.00E 04	7.93E-01	5.60E 00	
08 D 283				DI-N-BUTYL PHTHALATE	T	6.00E 04	7.93E-01	5.60E 00	
17 A 020*	P			NITROBENZENE	T	6.00E 04	7.93E-01	5.60E 00	
02 A 160*	P			BROMOFORM	T	6.00E 04	7.93E-01	5.60E 00	
16 B 020		W		A-CHLOROTOLUENE	T	6.00E 04	7.93E-01	5.60E 00	
08 D 282				DIETHYL PHTHALATE	T	6.00E 04	7.93E-01	5.60E 00	
08 A 103				CAPRIC ACID	T	6.00E 04	6.83E-01	4.80E 00	
08 A 101				CAPROIC ACID	T	6.00E 04	6.83E-01	4.80E 00	
08 A 104				LAURIC ACID	T	6.00E 04	6.83E-01	4.80E 00	
08 A 100				SATURATED LONG CHAIN ACIDS (MW:116-201)	T	6.00E 04	6.83E-01	4.80E 00	
08 A 102				CAPRYLIC ACID	T	6.00E 04	6.83E-01	4.80E 00	
23 A 103				4-CHLOROPYRIDINE	T	6.00E 04	6.80E-01	4.73E 00	
23 A 101				2-CHLOROPYRIDINE	T	6.00E 04	6.80E-01	4.73E 00	
23 A 102				3-CHLOROPYRIDINE	T	6.00E 04	6.80E-01	4.73E 00	
23 A 100		W		CHLOROPYRIDINES	T	6.00E 04	6.80E-01	4.73E 00	
10 A 060				ETHANOLAMINE	T	6.00E 04	6.61E-01	4.62E 00	
23 C 180				DIBENZO(A,G)CARBAZOLE	T	6.00E 04	6.61E-01	4.62E 00	
22 C 040				BENZO(J)FLUORANTHENE	T	6.00E 04	6.10E-01	4.24E 00	
16 B 043				1,4-BIS(CHLOROMETHYL)BENZENE	T	6.00E 04	6.00E-01	4.20E 00	
16 B 042				1,3-BIS(CHLOROMETHYL)BENZENE	T	6.00E 04	6.00E-01	4.20E 00	

CYCLONE DUST QUENCH WATER, HEALTH IMPACT

DMEG NO.			COMPOUND NAME	TYPE	CONC E-6 G/L	DS	WDS G/S	LCCAT
16 B 041			1,2-BIS(CHLOROMETHYBENZENE	T	6.00E 04	6.00E-01	4.20E 00	
16 B 040			BIS(CHLOROMETHYL)BENZENES	T	6.00E 04	6.00E-01	4.20E 00	
49 A 010	P		ARSENIC	D	1.20E 02	4.80E-01	3.40E 00	
15 B 163			P-TERPHENYL	T	6.00E 04	4.30E-01	3.00E 00	
15 B 162			M-TERPHENYL	T	6.00E 04	4.30E-01	3.00E 00	
15 B 160			TERPHENYLS	T	6.00E 04	4.30E-01	3.00E 00	
15 B 161			O-TERPHENYL	T	6.00E 04	4.30E-01	3.00E 00	
02 A 320*	P		HEXACHLOROETHANE	T	6.00E 04	4.00E-01	2.80E 00	
21 C 060			DIBENZ(A,C)ANTHRACENE	T	6.00E 04	4.00E-01	2.80E 00	
06 A 020		W	ETHYLENE GLYCOL	T	6.00E 04	4.00E-01	2.80E 00	
46 A 010	P		LEAD	D	9.90E 01	4.00E-01	2.80E 00	
23 B 200			BENZ(C)ACRIDINE	T	6.00E 04	3.71E-01	2.60E 00	
04 B 100			2,2'-DICHLORODIISOPROPYL ETHER	T	6.00E 04	3.71E-01	2.60E 00	
04 A 140*	P		2-CHLOROETHYL VINYL ETHER	T	6.00E 04	3.50E-01	2.44E 00	
02 B 104			TRANS-1,3-DICHLOROPROPENE	T	6.00E 04	3.50E-01	2.44E 00	
23 C 040			INDOLE	T	6.00E 04	3.50E-01	2.44E 00	
02 B 103			CIS-1,3-DICHLOROPROPENE	T	6.00E 04	3.50E-01	2.44E 00	
02 B 100*	P		DICHLOROPROPENES	T	6.00E 04	3.50E-01	2.44E 00	
07 B 100		W	CAMPHOR	T	6.00E 04	3.30E-01	2.31E 00	
23 C 140			DIBENZO(A,I)CARBAZOLE	T	6.00E 04	3.30E-01	2.31E 00	
16 A 160*	P		POLYCHLORINATED BENZENES	T	6.00E 04	3.30E-01	2.31E 00	
16 A 162			HEXACHLOROBENZENE	T	6.00E 04	3.30E-01	2.31E 00	
16 A 161			1,2,4-TRICHLOROBENZENE	T	6.00E 04	3.30E-01	2.31E 00	
08 D 080			METHYL METHACRYLATE	T	6.00E 04	2.83E-01	2.00E 00	
28 A 010			SODIUM	D	2.20E 05	2.80E-01	1.92E 00	
23 A 020			PYRIDINE	T	6.00E 04	2.60E-01	1.81E 00	
23 B 021			QUINOLINE	T	6.00E 04	2.50E-01	1.73E 00	
21 C 040			BENZO(G)CHRYSENE	T	6.00E 04	2.50E-01	1.73E 00	
23 B 022			ISOQUINOLINE	T	6.00E 04	2.50E-01	1.73E 00	
23 B 020			QUINOLINES	T	6.00E 04	2.50E-01	1.73E 00	
34 A 010			CALCIUM (AS CA+2)	D	5.40E 04	2.30E-01	1.60E 00	
23 A 145			3,4-DIMETHYLPYRIDINE	T	6.00E 04	2.20E-01	1.54E 00	
23 A 143			2,5-DIMETHYLPYRIDINE	T	6.00E 04	2.20E-01	1.54E 00	
23 A 141			2,3-DIMETHYLPYRIDINE	T	6.00E 04	2.20E-01	1.54E 00	

CYCLONE DUST QUENCH WATER, HEALTH IMPACT

DMEG NO.		COMPOUND NAME	TYPE	CONC E-6 G/L	DS	WDS G/S	LCCAT
23 A 142		2,4-DIMETHYLPYRIDINE	T	6.00E 04	2.20E-01	1.54E 00	
05 B 100	W	1-PHENYLETHANOL	T	6.00E 04	2.20E-01	1.54E 00	
23 A 144		2,6-DIMETHYLPYRIDINE	T	6.00E 04	2.20E-01	1.54E 00	
23 A 140		DISUBSTITUTED POLYSUBSTITUTED ALKYL PYRIDINES	T	6.00E 04	2.20E-01	1.54E 00	
23 A 146		2,3,4,6-TETRAMETHYL PYRIDINE	T	6.00E 04	2.20E-01	1.54E 00	
23 C 120		BENZO(A)CARBAZOLE	T	6.00E 04	2.20E-01	1.54E 00	
10 C 020		ANILINE	T	6.00E 04	2.12E-01	1.50E 00	
09 A 100		1,3-DICYANO-1-HYDROXYBUTANE	T	6.00E 04	2.10E-01	1.43E 00	
09 A 080		BUTYRONITRILE	T	6.00E 04	1.80E-01	1.30E 00	
23 C 102		9-METHYLCARBAZOLE	T	6.00E 04	1.80E-01	1.30E 00	
25 A 042		3-METHYLTHIOPHENE	T	6.00E 04	1.80E-01	1.22E 00	
25 A 040		METHYLTHIOPHENES	T	6.00E 04	1.80E-01	1.22E 00	
23 C 101		3-METHYLCARBAZOLE	T	6.00E 04	1.80E-01	1.22E 00	
25 A 041		2-METHYLTHIOPHENE	T	6.00E 04	1.80E-01	1.22E 00	
08 A 080		VALERIC ACID	T	6.00E 04	1.80E-01	1.22E 00	
23 C 100		METHYLCARBAZOLES	T	6.00E 04	1.80E-01	1.22E 00	
25 B 040	W	BENZO(B)THIOPHENE	T	6.00E 04	1.80E-01	1.22E 00	
23 B 260		DIBENZ(C,H)ACRIDINE	T	6.00E 04	1.70E-01	1.20E 00	
23 C 080		CARBAZOLE	T	6.00E 04	1.70E-01	1.20E 00	
10 A 080		1,2-DIAMINOETHANE	T	6.00E 04	1.70E-01	1.20E 00	
10 C 066		3,5-XYLIDINE	T	6.00E 04	1.60E-01	1.10E 00	
08 A 040		ACETIC ACID	T	6.00E 04	1.60E-01	1.10E 00	
10 C 065		3,4-XYLIDINE	T	6.00E 04	1.60E-01	1.10E 00	
10 D 020	W	N,N-DIMETHYLANILINE	T	6.00E 04	1.60E-01	1.10E 00	
10 C 061		2,3-XYLIDINE	T	6.00E 04	1.60E-01	1.10E 00	
10 C 063		2,5-XYLIDINE	T	6.00E 04	1.60E-01	1.10E 00	
10 C 064		2,6-XYLIDINE	T	6.00E 04	1.60E-01	1.10E 00	
07 B 080*	P	ISOPHORONE	T	6.00E 04	1.60E-01	1.10E 00	
10 C 062		2,4-XYLIDINE	T	6.00E 04	1.60E-01	1.10E 00	
10 C 060		DIMETHYLANILINES	T	6.00E 04	1.60E-01	1.10E 00	
25 A 064		3,4-DIMETHYLTHIOPHENE	T	6.00E 04	1.60E-01	1.10E 00	
25 A 063		2,5-DIMETHYLTHIOPHENE	T	6.00E 04	1.52E-01	1.10E 00	
25 A 060		DIMETHYLTHIOPHENES	T	6.00E 04	1.52E-01	1.10E 00	
25 A 062		2,4-DIMETHYLTHIOPHENE	T	6.00E 04	1.52E-01	1.10E 00	

CYCLONE DUST QUENCH WATER, HEALTH IMPACT

UMEG NO.			COMPOUND NAME	TYPE	CONC E-6 G/L	DS	WDS G/S	LCCAT
25 A 061			2,3-DIMETHYLTHIOPHENE	T	6.00E 04	1.52E-01	1.10E 00	
04 A 200			4-BROMOPHENYL PHENYL ETHER	T	6.00E 04	1.50E-01	1.01E 00	
04 A 180*	P		CHLOROPHENYL PHENYL ETHER	T	6.00E 04	1.50E-01	1.01E 00	
38 A 010			ALUMINUM	D	1.10E 04	1.40E-01	9.62E-01	
25 A 081			2,3,5-TRIMETHYLTHIOPHENE	T	6.00E 04	1.40E-01	9.50E-01	
25 A 080			TRIMETHYL AND TETRAMETHYL THIOPHENES	T	6.00E 04	1.40E-01	9.50E-01	
04 B 080			2,2'-DICHLORODIETHYL ETHER	T	6.00E 04	1.32E-01	9.30E-01	
17 A 042			3-NITROTOLUENE	T	6.00E 04	1.32E-01	9.30E-01	
01 B 220		W	DICYCLOPENTADIENE	T	6.00E 04	1.32E-01	9.30E-01	
04 B 040*	P		1,1'-DICHLORODIETHYL ETHER	T	6.00E 04	1.32E-01	9.30E-01	
17 A 043			4-NITROTOLUENE	T	6.00E 04	1.32E-01	9.30E-01	
08 C 020			FORMAMIDE	T	6.00E 04	1.32E-01	9.30E-01	
17 A 040			NITROTOLUENES	T	6.00E 04	1.32E-01	9.30E-01	
17 A 041			2-NITROTOLUENE	T	6.00E 04	1.32E-01	9.30E-01	
08 A 060			MALEIC ACID	T	6.00E 04	1.23E-01	8.70E-01	
33 A 010			MAGNESIUM	D	1.10E 04	1.22E-01	8.60E-01	
09 B 042			B-NAPHTHONITRILES	T	6.00E 04	1.21E-01	8.50E-01	
09 B 040		W	NAPHTHONITRILES	T	6.00E 04	1.21E-01	8.50E-01	
09 B 041			A-NAPHTHONITRILES	T	6.00E 04	1.21E-01	8.50E-01	
09 B 020		W	BENZONITRILE	T	6.00E 04	1.21E-01	8.50E-01	
27 A 010			LITHIUM	S	4.00E 01	1.21E-01	8.50E-01	
54 A 010		P	SELENIUM	S	6.00E 00	1.20E-01	8.40E-01	
36 A 010			BARIUM	D	5.70E 02	1.14E-01	8.00E-01	
23 A 043			4-METHYLPYRIDINE	T	6.00E 04	1.12E-01	7.90E-01	
23 A 042			3-METHYLPYRIDINE	T	6.00E 04	1.12E-01	7.90E-01	
23 A 041			2-METHYLPYRIDINE	T	6.00E 04	1.12E-01	7.90E-01	
10 A 120			PROPANOLAMINES	T	6.00E 04	1.10E-01	7.71E-01	
10 A 122			3-AMINO-1-PROPANOL	T	6.00E 04	1.10E-01	7.71E-01	
26 A 020		W	TRIETHYL PHOSPHATE	T	6.00E 04	1.10E-01	7.71E-01	
08 B 080			Y-BUTYROLACTONE	T	6.00E 04	1.10E-01	7.71E-01	
10 A 121			2-AMINO-1-PROPANOL	T	6.00E 04	1.10E-01	7.71E-01	
10 A 123			1-AMINO-2-PROPANOL	T	6.00E 04	1.10E-01	7.71E-01	
12 A 080			N-NITROSODIISOPROPYLAMINE	T	6.00E 04	1.04E-01	7.30E-01	
82 A 010		P	CADMIUM	D	< 5.00E 00<	1.00E-01<	7.00E-01	

CYCLONE DUST QUENCH WATER, HEALTH IMPACT

DMEG NO.			COMPOUND NAME	TYPE	CONC E-6 G/L	DS	WDS G/S	LCCAT
08 B 041			2-HYDROXYBENZOIC ACID	T	6.00E 04	9.91E-02	6.94E-01	
14 A 020		W	BENZENESULFONIC ACID	T	6.00E 04	9.91E-02	6.94E-01	
10 A 160			CYCLOHEXYLAMINE	T	6.00E 04	9.91E-02	6.94E-01	
07 B 120			ACETOPHENONE	T	6.00E 04	9.80E-02	6.82E-01	
23 C 060			METHYLINDOLES	T	6.00E 04	8.74E-02	6.12E-01	
02 A 140*	P		DIBROMOCHLOROMETHANE	T	6.00E 04	8.74E-02	6.12E-01	
23 C 062			3-METHYLINDOLE	T	6.00E 04	8.74E-02	6.12E-01	
23 C 061			2-METHYLINDOLE	T	6.00E 04	8.74E-02	6.12E-01	
05 C 040		W	T-PENTANOL	T	6.00E 04	8.74E-02	6.12E-01	
22 A 010		W	INDENE	T	6.00E 04	8.74E-02	6.12E-01	
76 A 010	P		NICKEL	D	< 2.00E 01<	8.70E-02<	6.10E-01	
21 A 020*	P		NAPHTHALENE	T	6.00E 04	7.93E-02	5.60E-01	
23 B 062			2,6-DIMETHYLQUINOLINE	T	6.00E 04	7.20E-02	5.01E-01	
23 B 060			DIMETHYLQUINOLINES	T	6.00E 04	7.20E-02	5.01E-01	
23 B 061			2,3-DIMETHYLQUINOLINE	T	6.00E 04	7.20E-02	5.01E-01	
23 B 064			3,4-DIMETHYLQUINOLINE	T	6.00E 04	7.20E-02	5.01E-01	
23 B 065			6,8-DIMETHYLQUINOLINE	T	6.00E 04	7.20E-02	5.01E-01	
23 B 067			1,5-DIMETHYLISOQUINOLINE	T	6.00E 04	7.20E-02	5.01E-01	
23 B 040			2-METHYLQUINOLINE	T	6.00E 04	7.20E-02	5.01E-01	
05 A 140		W	BENZYL ALCOHOL	T	6.00E 04	7.20E-02	5.01E-01	
23 B 063			2,8-DIMETHYLQUINOLINE	T	6.00E 04	7.20E-02	5.01E-01	
23 B 066			1,3-DIMETHYLISOQUINOLINE	T	6.00E 04	7.20E-02	5.01E-01	
21 A 140*	P		ANTHRACENE	T	6.00E 04	7.10E-02	5.00E-01	
02 A 361			1-BROMOBUTANE	T	6.00E 04	7.00E-02	4.90E-01	
02 A 360			BROMOBUTANES	T	6.00E 04	7.00E-02	4.90E-01	
07 A 140			BENZALDEHYDE	T	6.00E 04	6.80E-02	4.73E-01	
08 D 160			METHYL BENZOATE	T	6.00E 04	6.53E-02	4.60E-01	
16 A 200*	P		CHLORONAPHTHALENES	T	6.00E 04	6.00E-02	4.20E-01	
23 A 082			3-PHENYLPYRIDINE	T	6.00E 04	6.00E-02	4.20E-01	
23 A 083			4-PHENYLPYRIDINE	T	6.00E 04	6.00E-02	4.20E-01	
16 A 201			1-CHLORONAPHTHALENE	T	6.00E 04	6.00E-02	4.20E-01	
23 A 064			4-N-PROPYLPYRIDINE	T	6.00E 04	6.00E-02	4.20E-01	
23 A 080			PHENYLPYRIDINES	T	6.00E 04	6.00E-02	4.20E-01	
23 A 120			COLLIDINES	T	6.00E 04	6.00E-02	4.20E-01	

CYCLONE DUST QUENCH WATER, HEALTH IMPACT

DMEG NO.		COMPOUND NAME	TYPE	CONC E-6 G/L	DS	WDS G/S	LCCAT
10 B 100		MORPHOLINE	T	6.00E 04	6.00E-02	4.20E-01	
16 A 202		2-CHLORONAPHTHALENE	T	6.00E 04	6.00E-02	4.20E-01	
23 A 060		MONOSUBSTITUTED ALKYL PYRIDINES	T	6.00E 04	6.00E-02	4.20E-01	
23 A 062		3-ETHYLPYRIDINE	T	6.00E 04	6.00E-02	4.20E-01	
23 A 063		4-ETHYLPYRIDINE	T	6.00E 04	6.00E-02	4.20E-01	
23 A 122		2,4,6-COLLIDINE	T	6.00E 04	6.00E-02	4.20E-01	
23 A 081		2-PHENYLPYRIDINE	T	6.00E 04	6.00E-02	4.20E-01	
23 A 121		5-ETHYL-2-METHYLPYRIDINE	T	6.00E 04	6.00E-02	4.20E-01	
23 A 061		2-ETHYLPYRIDINE	T	6.00E 04	6.00E-02	4.20E-01	
08 D 200		DIETHYL ADIPATE	T	6.00E 04	5.40E-02	3.80E-01	
07 B 181		CARVONE(D OR L)	T	6.00E 04	5.40E-02	3.80E-01	
07 B 180		CARVONES	T	6.00E 04	5.40E-02	3.80E-01	
07 B 182		DIHYDRO-(D OR L)CARVONE	T	6.00E 04	5.40E-02	3.80E-01	
56 A 010		FLUORINE (AS F-)	D	2.00E 03	5.30E-02	3.70E-01	
12 A 100		N-NITROSODIPENTYLAMINE	T	6.00E 04	5.00E-02	3.50E-01	
05 A 160		PHENETHYL ALCOHOL	T	6.00E 04	5.00E-02	3.50E-01	
23 B 160		BENZO(H)QUINOLINE	T	6.00E 04	4.30E-02	3.00E-01	
22 B 040*	P W	FLUORANTHENE	T	6.00E 04	4.30E-02	3.00E-01	
23 B 140		BENZO(F)QUINOLINE	T	6.00E 04	4.30E-02	3.00E-01	
23 B 120		PHENANTHRIDINE	T	6.00E 04	4.30E-02	3.00E-01	
13 B 080		METHYL DISULFIDE	T	6.00E 04	4.30E-02	3.00E-01	
13 B 060		DIPHENYL SULFIDE	T	6.00E 04	4.30E-02	3.00E-01	
05 B 120		BORNEOL	T	6.00E 04	4.30E-02	3.00E-01	
23 B 080		ACRIDINE	T	6.00E 04	4.30E-02	3.00E-01	
83 A 010	P	MERCURY	T	6.00E 04	4.30E-02	3.00E-01	
15 A 142		SEC-BUTYL BENZENE	D	4.00E-01	4.00E-02	2.80E-01	
15 A 141		N-BUTYL BENZENE	T	6.00E 04	4.00E-02	2.80E-01	
15 A 143		TERT-BUTYL BENZENE	T	6.00E 04	4.00E-02	2.80E-01	
15 A 140		BUTYL BENZENES	T	6.00E 04	4.00E-02	2.80E-01	
15 B 203		1,2,4,5-TETRAMETHYLBENZENE	T	6.00E 04	4.00E-02	2.80E-01	
15 B 200		TETRAMETHYLBENZENES	T	6.00E 04	3.30E-02	2.31E-01	
15 B 180		TRIMETHYLBENZENES	T	6.00E 04	3.30E-02	2.31E-01	
15 B 182		1,2,4-TRIMETHYLBENZENE	T	6.00E 04	3.30E-02	2.31E-01	
15 B 202		1,2,3,5-TETRAMETHYLBENZENE	T	6.00E 04	3.30E-02	2.31E-01	

CYCLONE DUST QUENCH WATER, HEALTH IMPACT

DMEG NO.			COMPOUND NAME	TYPE	CONC E-6 G/L	DS	WDS G/S	LCCAT
15 B 181			1,2,3-TRIMETHYLBENZENE	T	6.00E 04	3.30E-02	2.31E-01	
15 B 183			1,3,5-TRIMETHYLBENZENE	T	6.00E 04	3.30E-02	2.31E-01	
15 B 201			1,2,3,4-TETRAMETHYLBENZENE	T	6.00E 04	3.30E-02	2.31E-01	
15 B 142			1,4-DIHYDRONAPHTHALENE	T	6.00E 04	3.13E-02	2.20E-01	
15 B 140			DIHYDRONAPHTHALENES	T	6.00E 04	3.13E-02	2.20E-01	
03 B 060			2-ETHYL-4-METHYL-1,3-DIOXOLANE	T	6.00E 04	3.13E-02	2.20E-01	
15 B 141			1,2-DIHYDRONAPHTHALENE	T	6.00E 04	3.13E-02	2.20E-01	
26 B 040		W	TRITOTYL PHOSPHATES	T	6.00E 04	3.00E-02	2.10E-01	
15 B 120			TETRAHYDRONAPHTHALENE	T	6.00E 04	3.00E-02	2.10E-01	
08 D 320*	P		BUTYL BENZYL PHTHALATE	T	6.00E 04	2.83E-02	2.00E-01	
08 A 160			BENZOIC ACID	T	6.00E 04	2.83E-02	2.00E-01	
14 A 044			9,10-ANTHRAQUINONE-1,8-DISULFONIC ACID	T	6.00E 04	2.70E-02	1.90E-01	
14 A 043			9,10-ANTHRAQUINONE-1,7-DISULFONIC ACID	T	6.00E 04	2.70E-02	1.90E-01	
14 A 041			9,10-ANTHRAQUINONE-1,5-DISULFONIC ACID	T	6.00E 04	2.70E-02	1.90E-01	
48 A 010			PHOSPHORUS	S	4.00E 02	2.70E-02	1.90E-01	
57 A 010			CHLORINE (AS CL-)	D	3.40E 04	2.61E-02	1.83E-01	
06 B 020		W	2,3-EPOXY-1-PROPANOL	T	6.00E 04	2.60E-02	1.81E-01	
05 A 100			ISOBUTYL ALCOHOL	T	6.00E 04	2.60E-02	1.81E-01	
05 A 080			N-BUTANOL	T	6.00E 04	2.60E-02	1.81E-01	
03 A 040		W	3-METHOXYBIPHENYL	T	6.00E 04	2.50E-02	1.73E-01	
05 B 080			2,6-DIMETHYL-4-HEPTANOL	T	6.00E 04	2.50E-02	1.73E-01	
08 A 180			ADIPIC ACID	T	6.00E 04	2.50E-02	1.73E-01	
35 A 010			STRONTIUM	D	1.10E 03	2.40E-02	1.70E-01	
37 A 010			BORON	D	9.90E 02	2.10E-02	1.50E-01	
05 C 060			A-TERPINEOL	T	6.00E 04	2.10E-02	1.43E-01	
68 A 010		P	CHROMIUM	D	< 5.00E 00<	2.00E-02<	1.40E-01	
17 B 020			METHOXYNITROBENZENES	T	6.00E 04	1.90E-02	1.30E-01	
17 B 022			1-METHOXY-3-NITROBENZENE	T	6.00E 04	1.90E-02	1.30E-01	
17 B 021			1-METHOXY-2-NITROBENZENE	T	6.00E 04	1.90E-02	1.30E-01	
17 B 023			1-METHOXY-4-NITROBENZENE	T	6.00E 04	1.90E-02	1.30E-01	
2' A 081			1,4-DIMETHYLNAPHTHALENE	T	6.00E 04	1.80E-02	1.22E-01	
21 A 044			2-ETHYLNAPHTHALENE	T	6.00E 04	1.80E-02	1.22E-01	
21 A 043			1-ETHYLNAPHTHALENE	T	6.00E 04	1.80E-02	1.22E-01	
21 A 083			2,6-DIMETHYLNAPHTHALENE	T	6.00E 04	1.80E-02	1.22E-01	

CYCLONE DUST QUENCH WATER, HEALTH IMPACT

DMEG NO.			COMPOUND NAME	TYPE	CONC E-6 G/L	DS	WDS G/S	LCCAT
15 B 020			INDAN	T	6.00E 04	1.80E-02	1.22E-01	
21 A 040			MONOALKYL NAPHTHALENES	T	6.00E 04	1.80E-02	1.22E-01	
21 A 042			2-METHYLNAPHTHALENE	T	6.00E 04	1.80E-02	1.22E-01	
21 A 080			DIMETHYLNAPHTHALENES	T	6.00E 04	1.80E-02	1.22E-01	
21 A 041			1-METHYLNAPHTHALENE	T	6.00E 04	1.80E-02	1.22E-01	
21 A 082			2,3-DIMETHYLNAPHTHALENE	T	6.00E 04	1.80E-02	1.22E-01	
21 B 180*	P		PYRENE	T	6.00E 04	1.80E-02	1.22E-01	
15 A 120			ISOPROPYL BENZENE	T	6.00E 04	1.70E-02	1.20E-01	
15 A 100			PROPYL BENZENE	T	6.00E 04	1.60E-02	1.11E-01	
08 D 240			DI-2-ETHYLBUTYL ADIPATE	T	6.00E 04	1.60E-02	1.11E-01	
16 A 180			2-CHLOROTOLUENE	T	6.00E 04	1.60E-02	1.10E-01	
26 B 020			TRIPHENYL PHOSPHATE	T	6.00E 04	1.60E-02	1.10E-01	
43 A 010			SILICON	T	6.00E 04	1.40E-02	9.70E-02	
16 A 100*	P		1,2-DICHLOROBENZENE	S	2.00E 03	1.33E-02	9.33E-02	
16 A 120*	P		1,3-DICHLOROBENZENE	T	6.00E 04	1.32E-02	9.30E-02	
74 A 010			COBALT	T	6.00E 04	1.32E-02	9.30E-02	
02 A 340*	P		DICHLOROPROPANES	S	9.00E 00	1.20E-02	8.40E-02	
01 A 201			N-OCTANE	T	6.00E 04	1.12E-02	7.90E-02	
02 A 343			1,3-DICHLOROPROPANE	T	6.00E 04	1.12E-02	7.90E-02	
01 A 200		W	OCTANES	T	6.00E 04	1.12E-02	7.90E-02	
16 A 020*	P		CHLOROBENZENE	T	6.00E 04	1.12E-02	7.90E-02	
05 B 062			3-PENTANOL	T	6.00E 04	1.12E-02	7.90E-02	
05 A 123			2,2-DIMETHYL-1-PROPANOL	T	6.00E 04	1.10E-02	7.71E-02	
05 A 124			3-METHYL-1-BUTANOL	T	6.00E 04	1.10E-02	7.71E-02	
05 A 121			N-PENTANOL	T	6.00E 04	1.10E-02	7.71E-02	
05 B 061			2-PENTANOL	T	6.00E 04	1.10E-02	7.71E-02	
05 A 120			PENTANOLS (PRIMARY)	T	6.00E 04	1.10E-02	7.71E-02	
05 B 063			3-METHYL-2-BUTANOL	T	6.00E 04	1.10E-02	7.71E-02	
05 A 122			2-METHYL-1-BUTANOL	T	6.00E 04	1.10E-02	7.71E-02	
05 B 060			PENTANOLS (SECONDARY)	T	6.00E 04	1.10E-02	7.71E-02	
15 A 040*	P		TOLUENE	T	6.00E 04	1.10E-02	7.71E-02	
16 A 083			1-BROMO-4-CHLOROBENZENE	T	6.00E 04	1.10E-02	7.43E-02	
16 A 080			BROMOCHLOROBENZENES	T	6.00E 04	1.00E-02	7.10E-02	
16 A 082			1-BROMO-3-CHLOROBENZENE	T	6.00E 04	1.00E-02	7.10E-02	

CYCLONE DUST QUENCH WATER, HEALTH IMPACT

DMEG NO.		COMPOUND NAME	TYPE	CONC E-6 G/L	DS	WDS G/S	LCCAT
16 A 081		1-BROMO-2-CHLOROBENZENE	T	6.00E 04	1.00E-02	7.10E-02	
15 A 060*	P	ETHYL BENZENE	T	6.00E 04	9.20E-03	6.40E-02	
16 A 140*	P	1,4-DICHLOROBENZENE	T	6.00E 04	8.74E-03	6.12E-02	
79 A 010	P	SILVER	S	2.00E 00	8.00E-03	5.60E-02	
65 A 010		VANADIUM	D	1.50E 01	6.00E-03	4.20E-02	
02 B 080*	P	TETRACHLOROETHENE	T	6.00E 04	5.94E-03	4.20E-02	
71 A 010	P	MANGANESE	D	< 1.00E 00<	4.00E-03<	2.80E-02	
78 A 010	P	COPPER	D	1.20E 01	2.40E-03	1.70E-02	
62 A 010		TITANIUM	D	1.80E 02	2.00E-03	1.40E-02	
81 A 010	P	ZINC	D	3.50E 01	1.40E-03	9.80E-03	
44 A 010		GERMANIUM	S	7.00E 00	8.33E-04	5.83E-03	
39 A 010		GALLIUM	S	2.00E 01	2.70E-04	1.90E-03	
61 A 010		YTTRIUM (AS Y+3)	S	2.00E 00	1.33E-04	9.33E-04	
63 A 010		ZIRCONIUM (AS ZR+4)	S	5.00E 00	6.70E-05	4.70E-04	
69 A 010		MOLYBDENUM	S	4.00E 00	5.33E-05	3.73E-04	
30 A 010		RUBIDIUM (AS RB+)	S	2.00E 01	1.11E-05	7.80E-05	
84 B 010		CERIUM	S	2.00E 00	3.63E-06	2.54E-05	
31 A 010		CESIUM	S	4.00E 00	3.33E-06	2.33E-05	
04 A 160*	P	A-CHLOROBUTYL ETHYL ETHER	T	0.00E-01	0.00E-01	0.00E-01	4
04 A 180*	P	CHLOROPHENYL PHENYL ETHER	T	0.00E-01	0.00E-01	0.00E-01	5
58 A 010		BROMINE	S	4.00E 01	0.00E-01	0.00E-01	
04 A 180*	P	CHLOROPHENYL PHENYL ETHER	T	0.00E-01	0.00E-01	0.00E-01	4
21 A 020*	P	NAPHTHALENE	T	0.00E-01	0.00E-01	0.00E-01	3
19 A 060*	P W	PENTACHLOROPHENOL	T	0.00E-01	0.00E-01	0.00E-01	5
02 B 140*	P W	HEXACHLOROCYCLOPENTADIENE	T	0.00E-01	0.00E-01	0.00E-01	1
45 A 010		TIN	D	2.90E 03	0.00E-01	0.00E-01	
21 B 040*	P	BENZ(A)ANTHRACENE	T	0.00E-01	0.00E-01	0.00E-01	2
04 A 140*	P	2-CHLOROETHYL VINYL ETHER	T	0.00E-01	0.00E-01	0.00E-01	5
18 A 142*	P	2,4-XYLENOL	T	0.00E-01	0.00E-01	0.00E-01	5
08 D 280*	P W	PHTHALATE ESTERS (MW:194-279)	T	0.00E-01	0.00E-01	0.00E-01	5
02 B 120*	P	HEXACHLOROBUTADIENE	T	0.00E-01	0.00E-01	0.00E-01	2
17 A 084*	P	2,4-DINITROTOLUENE	T	0.00E-01	0.00E-01	0.00E-01	4
53 A 010		SULFUR	D	2.30E 04	0.00E-01	0.00E-01	
21 A 100*	PH	ACENAPHTHENE	T	0.00E-01	0.00E-01	0.00E-01	3

CYCLONE DUST QUENCH WATER, HEALTH IMPACT

DMEG NO.	COMPOUND NAME	TYPE	CONC E-6 G/L	DS	WDS G/S	LCCAT
08 D 300* P	DI-2-ETHYLHEXYL PHTHALATE	T	0.00E-01	0.00E-01	0.00E-01	5
17 A 081* P	2,6-DINITROTOLUENE	T	0.00E-01	0.00E-01	0.00E-01	4
21 A 120* PH	ACENAPHTHYLENE	T	0.00E-01	0.00E-01	0.00E-01	3
04 B 020* P W	1,1'-DICHLOROMETHYL ETHER	T	0.00E-01	0.00E-01	0.00E-01	5
21 C 080* P	DIBENZ(A,H)ANTHRACENE	T	0.00E-01	0.00E-01	0.00E-01	3
02 A 320* P	HEXACHLOROETHANE	T	0.00E-01	0.00E-01	0.00E-01	2
02 B 080* P	TETRACHLOROETHENE	T	0.00E-01	0.00E-01	0.00E-01	1
21 A 180* P W	PHENANTHRENE	T	0.00E-01	0.00E-01	0.00E-01	2
16 A 200* P	CHLORONAPHTHALENES	T	0.00E-01	0.00E-01	0.00E-01	2
02 B 140* P W	HEXACHLOROCYCLOPENTADIENE	T	0.00E-01	0.00E-01	0.00E-01	2
18 A 020* P W	PHENOL	T	0.00E-01	0.00E-01	0.00E-01	5
08 D 300* P	DI-2-ETHYLHEXYL PHTHALATE	T	0.00E-01	0.00E-01	0.00E-01	6
17 A 081* P	2,6-DINITROTOLUENE	T	0.00E-01	0.00E-01	0.00E-01	5
08 D 280* P W	PHTHALATE ESTERS (MW:194-279)	T	0.00E-01	0.00E-01	0.00E-01	6
02 B 120* P	HEXACHLOROBUTADIENE	T	0.00E-01	0.00E-01	0.00E-01	1
21 B 180* P	PYRENE	T	0.00E-01	0.00E-01	0.00E-01	2
21 B 180* P	PYRENE	T	0.00E-01	0.00E-01	0.00E-01	3
17 A 084* P	2,4-DINITROTOLUENE	T	0.00E-01	0.00E-01	0.00E-01	5
59 A 010	IODINE (AS I-)	S	6.00E 00	0.00E-01	0.00E-01	
17 A 020* P	NITROBENZENE	T	0.00E-01	0.00E-01	0.00E-01	4
21 A 020* P	NAPHTHALENE	T	0.00E-01	0.00E-01	0.00E-01	2
22 B 040* P W	FLUORANTHENE	T	0.00E-01	0.00E-01	0.00E-01	2
21 A 100* PH	ACENAPHTHENE	T	6.00E 04	0.00E-01	0.00E-01	
04 A 160* P	A-CHLOROBUTYL ETHYL ETHER	T	0.00E-01	0.00E-01	0.00E-01	5
22 C 020* P	BENZO(K)FLUORANTHENE	T	0.00E-01	0.00E-01	0.00E-01	2
22 C 020* P	BENZO(K)FLUORANTHENE	T	0.00E-01	0.00E-01	0.00E-01	3
21 B 120* P	CHRYSENE	T	0.00E-01	0.00E-01	0.00E-01	2
21 B 120* P	CHRYSENE	T	0.00E-01	0.00E-01	0.00E-01	3
22 C 080* P W	BENZO(B)FLUORANTHENE	T	0.00E-01	0.00E-01	0.00E-01	2
22 C 080* P W	BENZO(B)FLUORANTHENE	T	0.00E-01	0.00E-01	0.00E-01	3
22 B 040* P W	FLUORANTHENE	T	0.00E-01	0.00E-01	0.00E-01	3
08 D 320* P	BUTYL BENZYL PHTHALATE	T	0.00E-01	0.00E-01	0.00E-01	6
22 D 020* P W	INDENO(1,2,3-CD)PYRENE	T	0.00E-01	0.00E-01	0.00E-01	3
10 C 140* P	BENZIDINE	T	0.00E-01	0.00E-01	0.00E-01	6

CYCLONE DUST QUENCH WATER, HEALTH IMPACT

DMEG NO.	COMPOUND NAME	TYPE	CONC E-6 G/L	DS	WDS G/S	LCCAT
02 B 080* P	TETRACHLOROETHENE	T	0.00E-01	0.00E-01	0.00E-01	2
21 A 120* PH	ACENAPHTHYLENE	T	6.00E 04	0.00E-01	0.00E-01	
02 B 100* P	DICHLOROPROPENES	T	0.00E-01	0.00E-01	0.00E-01	1
17 A 020* P	NITROBENZENE	T	0.00E-01	0.00E-01	0.00E-01	5
12 A 020* P W	N-NITROSODIMETHYLAMINE	T	0.00E-01	0.00E-01	0.00E-01	5
12 A 020* P W	N-NITROSODIMETHYLAMINE	T	0.00E-01	0.00E-01	0.00E-01	6
29 A 010	POTASSIUM	S	> 1.00E 04>	0.00E-01>	0.00E-01	
12 A 040* P	N-NITROSODIETHYLAMINE	T	0.00E-01	0.00E-01	0.00E-01	5
12 A 040* P	N-NITROSODIETHYLAMINE	T	0.00E-01	0.00E-01	0.00E-01	6
16 A 200* P	CHLORONAPHTHALENES	T	0.00E-01	0.00E-01	0.00E-01	3
12 A 060* P	N-NITROSODIPROPYLAMINE	T	0.00E-01	0.00E-01	0.00E-01	5
12 A 060* P	N-NITROSODIPROPYLAMINE	T	0.00E-01	0.00E-01	0.00E-01	6
21 B 040* P	BENZ(A)ANTHRACENE	T	0.00E-01	0.00E-01	0.00E-01	3
10 C 140* P	BENZIDINE	T	0.00E-01	0.00E-01	0.00E-01	5
22 D 020* P W	INDENO(1,2,3-CD)PYRENE	T	0.00E-01	0.00E-01	0.00E-01	2
21 D 080* PH	BENZO(GHI)PERYLENE	T	0.00E-01	0.00E-01	0.00E-01	3
02 A 140* P	DIBROMOCHLOROMETHANE	T	0.00E-01	0.00E-01	0.00E-01	1
02 A 140* P	DIBROMOCHLOROMETHANE	T	0.00E-01	0.00E-01	0.00E-01	2
04 A 140* P	2-CHLOROETHYL VINYL ETHER	T	0.00E-01	0.00E-01	0.00E-01	4
02 A 160* P	BROMOFORM	T	0.00E-01	0.00E-01	0.00E-01	1
19 A 020* P W	2-CHLOROPHENOL	T	0.00E-01	0.00E-01	0.00E-01	5
19 A 020* P W	2-CHLOROPHENOL	T	0.00E-01	0.00E-01	0.00E-01	6
04 A 160* P	A-CHLOROBUTYL ETHYL ETHER	T	6.00E 04	0.00E-01	0.00E-01	
19 A 040* P W	2,4-DICHLOROPHENOL	T	0.00E-01	0.00E-01	0.00E-01	5
19 A 040* P W	2,4-DICHLOROPHENOL	T	0.00E-01	0.00E-01	0.00E-01	6
15 A 040* P	TOLUENE	T	0.00E-01	0.00E-01	0.00E-01	2
15 A 040* P	TOLUENE	T	0.00E-01	0.00E-01	0.00E-01	3
19 A 060* P W	PENTACHLOROPHENOL	T	0.00E-01	0.00E-01	0.00E-01	6
15 A 060* P	ETHYL BENZENE	T	0.00E-01	0.00E-01	0.00E-01	2
15 A 060* P	ETHYL BENZENE	T	0.00E-01	0.00E-01	0.00E-01	3
08 D 320* P	BUTYL BENZYL PHTHALATE	T	0.00E-01	0.00E-01	0.00E-01	5
19 B 022* P	CHLORINATED-M-CRESOLS	T	0.00E-01	0.00E-01	0.00E-01	5
19 B 022* P	CHLORINATED-M-CRESOLS	T	0.00E-01	0.00E-01	0.00E-01	6
04 B 040* P	1,1'-DICHLORODIETHYL ETHER	T	0.00E-01	0.00E-01	0.00E-01	4

CYCLONE DUST QUENCH WATER, HEALTH IMPACT

DMEG NO.	COMPOUND NAME	TYPE	CONC E-6 G/L	DS	WDS G/S	LCCAT
04 B 040* P	1,1'-DICHLORODIETHYL ETHER	T	0.00E-01	0.00E-01	0.00E-01	5
20 A 020* P W	2-NITROPHENOL	T	0.00E-01	0.00E-01	0.00E-01	5
02 B 100* P	DICHLOROPROPENES	T	0.00E-01	0.00E-01	0.00E-01	6
21 C 080* P	DIBENZ(A,H)ANTHRACENE	T	0.00E-01	0.00E-01	0.00E-01	2
20 A 060* P W	4-NITROPHENOL	T	0.00E-01	0.00E-01	0.00E-01	2
20 A 060* P W	4-NITROPHENOL	T	0.00E-01	0.00E-01	0.00E-01	5
21 C 100* P W	BENZO(A)PYRENE	T	0.00E-01	0.00E-01	0.00E-01	6
21 C 100* P W	BENZO(A)PYRENE	T	0.00E-01	0.00E-01	0.00E-01	2
21 A 180* P W	PHENANTHRENE	T	0.00E-01	0.00E-01	0.00E-01	3
20 A 101* P	2,4-DINITROPHENOL	T	0.00E-01	0.00E-01	0.00E-01	3
20 A 101* P	2,4-DINITROPHENOL	T	0.00E-01	0.00E-01	0.00E-01	5
18 A 020* P W	PHENOL	T	0.00E-01	0.00E-01	0.00E-01	6
04 B 020* P W	1,1'-DICHLOROMETHYL ETHER	T	0.00E-01	0.00E-01	0.00E-01	6
21 D 080* PH	BENZO(GHI)PERYLENE	T	0.00E-01	0.00E-01	0.00E-01	4
21 D 080* PH	BENZO(GHI)PERYLENE	T	6.00E 04	0.00E-01	0.00E-01	
20 B 020* P W	4,6-DINITRO-O-CRESOL	T	0.00E-01	0.00E-01	0.00E-01	2
20 B 020* P W	4,6-DINITRO-O-CRESOL	T	0.00E-01	0.00E-01	0.00E-01	5
22 A 020* PH	FLUORENE	T	0.00E-01	0.00E-01	0.00E-01	6
22 A 020* PH	FLUORENE	T	6.00E 04	0.00E-01	0.00E-01	
22 A 020* PH	FLUORENE	T	0.00E-01	0.00E-01	0.00E-01	2
02 A 160* P	BROMOFORM	T	0.00E-01	0.00E-01	0.00E-01	3
16 A 020* P	CHLOROBENZENE	T	0.00E-01	0.00E-01	0.00E-01	2
16 A 020* P	CHLOROBENZENE	T	0.00E-01	0.00E-01	0.00E-01	2
02 A 320* P	HEXACHLOROETHANE	T	0.00E-01	0.00E-01	0.00E-01	3
07 B 080* P	ISOPHORONE	T	0.00E-01	0.00E-01	0.00E-01	1
07 B 080* P	ISOPHORONE	T	0.00E-01	0.00E-01	0.00E-01	5
02 A 340* P	DICHLOROPROPANES	T	0.00E-01	0.00E-01	0.00E-01	6
02 A 340* P	DICHLOROPROPANES	T	0.00E-01	0.00E-01	0.00E-01	1
16 A 100* P	1,2-DICHLOROBENZENE	T	0.00E-01	0.00E-01	0.00E-01	2
16 A 100* P	1,2-DICHLOROBENZENE	T	0.00E-01	0.00E-01	0.00E-01	2
18 A 142* P	2,4-XYLENOL	T	0.00E-01	0.00E-01	0.00E-01	3
16 A 120* P	1,3-DICHLOROBENZENE	T	0.00E-01	0.00E-01	0.00E-01	6
16 A 120* P	1,3-DICHLOROBENZENE	T	0.00E-01	0.00E-01	0.00E-01	2
		T	0.00E-01	0.00E-01	0.00E-01	3

CYCLONE DUST QUENCH WATER, HEALTH IMPACT

DMEG NO.	COMPOUND NAME	TYPE	CONC E-6 G/L	DS	WDS G/S	LCCAT
21 A 100* PH	ACENAPHTHENE	T	0.00E-01	0.00E-01	0.00E-01	2
16 A 140* P	1,4-DICHLOROBENZENE	T	0.00E-01	0.00E-01	0.00E-01	2
16 A 140* P	1,4-DICHLOROBENZENE	T	0.00E-01	0.00E-01	0.00E-01	3
21 A 120* PH	ACENAPHTHYLENE	T	0.00E-01	0.00E-01	0.00E-01	2
16 A 160* P	POLYCHLORINATED BENZENES	T	0.00E-01	0.00E-01	0.00E-01	2
16 A 160* P	POLYCHLORINATED BENZENES	T	0.00E-01	0.00E-01	0.00E-01	3
21 A 140* P	ANTHRACENE	T	0.00E-01	0.00E-01	0.00E-01	2
21 A 140* P	ANTHRACENE	T	0.00E-01	0.00E-01	0.00E-01	3

CYCLONE DUST QUENCH WATER

APPROXIMATE FLOW RATE = 7 G/S (0.007 L/S)

TOTAL ORGANIC LOADING = 59.9 MG/L

ORGANIC LOADING

59500.0

FLOW RATE = 7.00

MINIMUM DISCHARGE SEVERITY = .010

STATE: LIQUID, UNITS IN MICROGRAMS/L

IMPACT: ECOLOGY

EXPERIMENTALY DETERMINED DATA

SPARK SOURCE DATA

CYCLONE DUST QUENCH WATER, ECOLOGY IMPACT

DMEG NO.				COMPOUND NAME	TYPE	CONC E-6 G/L	DS	WDS G/S	LCCAT
16 A 220		W		POLYCHLORINATED BIPHENYLS	T	6.00E 04	1.20E 07	8.33E 07	
02 A 380		W		HEXACHLOROCYCLOHEXANE	T	6.00E 04	3.00E 06	2.10E 07	
08 D 282				DIETHYL PHTHALATE	T	6.00E 04	4.00E 04	2.80E 05	
08 D 283				DI-N-BUTYL PHTHALATE	T	6.00E 04	4.00E 04	2.80E 05	
08 D 281				DIMETHYL PHTHALATE	T	6.00E 04	4.00E 04	2.80E 05	
08 D 280*	P	W		PHTHALATE ESTERS (MW:194-279)	T	6.00E 04	4.00E 04	2.80E 05	
19 A 060*	P	W		PENTACHLOROPHENOL	T	6.00E 04	2.40E 03	1.70E 04	
48 A 010				PHOSPHORUS	S	4.00E 02	8.00E 02	5.60E 03	
16 A 082				1-BROMO-3-CHLOROBENZENE	T	6.00E 04	6.00E 02	4.20E 03	
16 A 063				1,4-DIBROMOBENZENE	T	6.00E 04	6.00E 02	4.20E 03	
21 A 020*	P			NAPHTHALENE	T	6.00E 04	6.00E 02	4.20E 03	
16 A 081				1-BROMO-2-CHLOROBENZENE	T	6.00E 04	6.00E 02	4.20E 03	
16 A 060				DIBROMOBENZENES	T	6.00E 04	6.00E 02	4.20E 03	
16 A 083				1-BROMO-4-CHLOROBENZENE	T	6.00E 04	6.00E 02	4.20E 03	
16 A 062				1,3-DIBROMOBENZENE	T	6.00E 04	6.00E 02	4.20E 03	
16 B 040				BIS(CHLOROMETHYL)BENZENES	T	6.00E 04	6.00E 02	4.20E 03	
16 B 041				1,2-BIS(CHLOROMETHYBENZENE	T	6.00E 04	6.00E 02	4.20E 03	
16 A 160*	P			POLYCHLORINATED BENZENES	T	6.00E 04	6.00E 02	4.20E 03	
01 B 220		W		DICYCLOPENTADIENE	T	6.00E 04	6.00E 02	4.20E 03	
16 A 061				1,2-DIBROMOBENZENE	T	6.00E 04	6.00E 02	4.20E 03	
16 A 140*	P			1,4-DICHLOROBENZENE	T	6.00E 04	6.00E 02	4.20E 03	
16 A 162				HEXACHLOROBENZENE	T	6.00E 04	6.00E 02	4.20E 03	
20 A 101*	P			2,4-DINITROPHENOL	T	6.00E 04	6.00E 02	4.20E 03	
16 A 120*	P			1,3-DICHLOROBENZENE	T	6.00E 04	6.00E 02	4.20E 03	
16 A 040				BROMOBENZENE	T	6.00E 04	6.00E 02	4.20E 03	
26 B 040		W		TRITOTYL PHOSPHATES	T	6.00E 04	6.00E 02	4.20E 03	
16 B 020		W		A-CHLOROTOLUENE	T	6.00E 04	6.00E 02	4.20E 03	
20 A 103				2,6-DINITROPHENOL	T	6.00E 04	6.00E 02	4.20E 03	
20 A 100		W		DINITROPHENOLS	T	6.00E 04	6.00E 02	4.20E 03	
16 B 042				1,3-BIS(CHLOROMETHYL)BENZENE	T	6.00E 04	6.00E 02	4.20E 03	
16 B 043				1,4-BIS(CHLOROMETHYL)BENZENE	T	6.00E 04	6.00E 02	4.20E 03	
16 A 161				1,2,4-TRICHLOROBENZENE	T	6.00E 04	6.00E 02	4.20E 03	
10 C 220		W		2-AMINONAPHTHALENE	T	6.00E 04	6.00E 02	4.20E 03	
10 C 140*	P	W		BENZIDINE	T	6.00E 04	6.00E 02	4.20E 03	

CYCLONE DUST QUENCH WATER, ECOLOGY IMPACT

DMEG NO.			COMPOUND NAME	TYPE	CONC E-6 G/L	DS	WDS G/S	LCCAT
16 A 020*	P		CHLOROBENZENE	T	6.00E 04	6.00E 02	4.20E 03	
20 A 102			2,5-DINITROPHENOL	T	6.00E 04	6.00E 02	4.20E 03	
10 C 200		W	1-AMINONAPHTHALENE	T	6.00E 04	6.00E 02	4.20E 03	
16 A 080			BROMOCHLOROBENZENES	T	6.00E 04	6.00E 02	4.20E 03	
20 A 080		W	2-AMINO-4,6-DINITROPHENOL	T	6.00E 04	6.00E 02	4.20E 03	
16 A 100*	P		1,2-DICHLOROBENZENE	T	6.00E 04	6.00E 02	4.20E 03	
18 A 120		W	2,2'-DIHYDROXYDIPHENYL	T	6.00E 04	1.20E 02	8.33E 02	
20 A 040			3-NITROPHENOL	T	6.00E 04	1.20E 02	8.33E 02	
20 B 040		W	DINITRO-P-CRESOLS	T	6.00E 04	1.20E 02	8.33E 02	
18 B 080		W	1,2,3-TRIHYDROXYBENZENE	T	6.00E 04	1.20E 02	8.33E 02	
18 C 080		W	INDANOLS	T	6.00E 04	1.20E 02	8.33E 02	
19 B 023			CHLORINATED-P-CRESOLS	T	6.00E 04	1.20E 02	8.33E 02	
18 A 060		W	2-METHOXYPHENOL	T	6.00E 04	1.20E 02	8.33E 02	
19 A 020*	P		2-CHLOROPHENOL	T	6.00E 04	1.20E 02	8.33E 02	
16 A 103			M-PHENYLPHENOL	T	6.00E 04	1.20E 02	8.33E 02	
20 A 020*	P		2-NITROPHENOL	T	6.00E 04	1.20E 02	8.33E 02	
18 B 040		W	1,3-DIHYDROXYBENZENE	T	6.00E 04	1.20E 02	8.33E 02	
23 B 080		W	ACRIDINE	T	6.00E 04	1.20E 02	8.33E 02	
18 A 146			3,4-XYLENOL	T	6.00E 04	1.20E 02	8.33E 02	
18 A 080		W	ETHYLPHENOLS	T	6.00E 04	1.20E 02	8.33E 02	
18 A 040		W	CRESOLS	T	6.00E 04	1.20E 02	8.33E 02	
18 A 041			M-CRESOL	T	6.00E 04	1.20E 02	8.33E 02	
18 C 081			1-INDANOL	T	6.00E 04	1.20E 02	8.33E 02	
18 A 100		W	PHENYLPHENOLS	T	6.00E 04	1.20E 02	8.33E 02	
18 A 043			P-CRESOL	T	6.00E 04	1.20E 02	8.33E 02	
18 A 182			4,6-DI-TERT-BUTYL-M-CRESOL	T	6.00E 04	1.20E 02	8.33E 02	
18 A 081			O-ETHYLPHENOL	T	6.00E 04	1.20E 02	8.33E 02	
18 A 082			M-ETHYLPHENOL	T	6.00E 04	1.20E 02	8.33E 02	
18 A 083			P-ETHYLPHENOL	T	6.00E 04	1.20E 02	8.33E 02	
18 B 060		W	1,4-DIHYDROXYBENZENE	T	6.00E 04	1.20E 02	8.33E 02	
18 A 101			O-PHENYLPHENOL	T	6.00E 04	1.20E 02	8.33E 02	
18 C 020		W	1-NAPHTHOL	T	6.00E 04	1.20E 02	8.33E 02	
20 A 060*	P		4-NITROPHENOL	T	6.00E 04	1.20E 02	8.33E 02	
18 A 162			4-ETHYL-O-CRESOL	T	6.00E 04	1.20E 02	8.33E 02	

CYCLONE DUST QUENCH WATER, ECOLOGY IMPACT

DMEG NO.				COMPOUND NAME	TYPE	CONC E-6 G/L	DS	WDS G/S	LCCAT
18 A 140		W		XYLENOLS	T	6.00E 04	1.20E 02	8.33E 02	
18 A 020*	P	W		PHENOL	T	6.00E 04	1.20E 02	8.33E 02	
18 C 083				5-INDANOL	T	6.00E 04	1.20E 02	8.33E 02	
18 A 102				P-PHENYLPHENOL	T	6.00E 04	1.20E 02	8.33E 02	
18 A 183				2,6-DIMETHYL-4-HEPTYL PHENOL	T	6.00E 04	1.20E 02	8.33E 02	
18 A 143				2,5-XYLENOL	T	6.00E 04	1.20E 02	8.33E 02	
19 A 040*	P			2,4-DICHLOROPHENOL	T	6.00E 04	1.20E 02	8.33E 02	
18 A 145				3,5-XYLENOL	T	6.00E 04	1.20E 02	8.33E 02	
20 A 120				2,4,6-TRINITROPHENOL	T	6.00E 04	1.20E 02	8.33E 02	
18 A 160		W		ETHYL CRESOLS	T	6.00E 04	1.20E 02	8.33E 02	
18 A 161				6-ETHYL-M-CRESOL	T	6.00E 04	1.20E 02	8.33E 02	
18 B 020		W		CATECHOL	T	6.00E 04	1.20E 02	8.33E 02	
18 A 163				2-ETHYL-P-CRESOL	T	6.00E 04	1.20E 02	8.33E 02	
20 B 042				2,6-DINITRO-P-CRESOL	T	6.00E 04	1.20E 02	8.33E 02	
18 A 181				2,4,6-TRIMETHYL METHYL PHENOL	T	6.00E 04	1.20E 02	8.33E 02	
20 B 020*	P	W		4,6-DINITRO-O-CRESOL	T	6.00E 04	1.20E 02	8.33E 02	
18 C 040		W		2-NAPHTHOL	T	6.00E 04	1.20E 02	8.33E 02	
18 C 082				4-INDANOL	T	6.00E 04	1.20E 02	8.33E 02	
18 A 144				2,6-XYLENOL	T	6.00E 04	1.20E 02	8.33E 02	
18 A 141				2,3-XYLENOL	T	6.00E 04	1.20E 02	8.33E 02	
18 A 042				O-CRESOL	T	6.00E 04	1.20E 02	8.33E 02	
19 B 020		W		CHLORINATED CRESOLS	T	6.00E 04	1.20E 02	8.33E 02	
19 B 022*	P			CHLORINATED-M-CRESOLS	T	6.00E 04	1.20E 02	8.33E 02	
18 A 142*	P			2,4-XYLENOL	T	6.00E 04	1.20E 02	8.33E 02	
18 A 180		W		POLYALKYLPHENOLS (MW>135)	T	6.00E 04	1.20E 02	8.33E 02	
20 B 041				3,5-DINITRO-P-CRESOL	T	6.00E 04	1.20E 02	8.33E 02	
19 B 021				CHLORINATED-O-CRESOLS	T	6.00E 04	1.20E 02	8.33E 02	
15 A 060*	P	W		ETHYL BENZENE	T	6.00E 04	6.00E 01	4.20E 02	
17 A 085				2,5-DINITROTOLUENE	T	6.00E 04	6.00E 01	4.20E 02	
17 A 083				2,3-DINITROTOLUENE	T	6.00E 04	6.00E 01	4.20E 02	
17 A 080		W		DINITROTOLUENES	T	6.00E 04	6.00E 01	4.20E 02	
08 D 120				BUTYL ACETATES	T	6.00E 04	6.00E 01	4.20E 02	
17 A 082				3,4-DINITROTOLUENE	T	6.00E 04	6.00E 01	4.20E 02	
02 B 080*	P	W		TETRACHLOROETHENE	T	6.00E 04	6.00E 01	4.20E 02	

CYCLONE DUST QUENCH WATER, ECOLOGY IMPACT

DMEG NO.				COMPOUND NAME	TYPE	CONC E-6 G/L	DS	WDS G/S	LCCAT
04 A 040		W		2-CHLORO-1,2-EPOXYPROPANE	T	6.00E 04	6.00E 01	4.20E 02	
10 A 080		W		1,2-DIAMINOETHANE	T	6.00E 04	6.00E 01	4.20E 02	
17 A 084*	P			2,4-DINITROTOLUENE	T	6.00E 04	6.00E 01	4.20E 02	
08 D 141				N-AMYL ACETATE	T	6.00E 04	6.00E 01	4.20E 02	
08 D 142				SEC-AMYL ACETATE	T	6.00E 04	6.00E 01	4.20E 02	
17 A 040		W		NITROTOLUENES	T	6.00E 04	6.00E 01	4.20E 02	
17 A 041				2-NITROTOLUENE	T	6.00E 04	6.00E 01	4.20E 02	
02 B 100*	P	W		DICHLOROPROPENES	T	6.00E 04	6.00E 01	4.20E 02	
17 A 043				4-NITROTOLUENE	T	6.00E 04	6.00E 01	4.20E 02	
17 A 081*	P			2,6-DINITROTOLUENE	T	6.00E 04	6.00E 01	4.20E 02	
15 B 106				1,4-DI-TERT-BUTYL BENZENE	T	6.00E 04	6.00E 01	4.20E 02	
15 B 120		W		TETRAHYDRONAPHTHALENE	T	6.00E 04	6.00E 01	4.20E 02	
15 B 080		W		XYLENES	T	6.00E 04	6.00E 01	4.20E 02	
15 B 081				O-XYLENE	T	6.00E 04	6.00E 01	4.20E 02	
15 A 040*	P	W		TOLUENE	T	6.00E 04	6.00E 01	4.20E 02	
15 B 105				M-DIISOPROPYL BENZENE	T	6.00E 04	6.00E 01	4.20E 02	
02 A 340*	P			DICHLOROPROPANES	T	6.00E 04	6.00E 01	4.20E 02	
15 B 101				O-DIETHYL BENZENE	T	6.00E 04	6.00E 01	4.20E 02	
17 A 086				3,5-DINITROTOLUENE	T	6.00E 04	6.00E 01	4.20E 02	
17 A 042				3-NITROTOLUENE	T	6.00E 04	6.00E 01	4.20E 02	
15 A 080		W		STYRENE	T	6.00E 04	6.00E 01	4.20E 02	
15 A 100		W		PROPYL BENZENE	T	6.00E 04	6.00E 01	4.20E 02	
02 B 103				CIS-1,3-DICHLOROPROPENE	T	6.00E 04	6.00E 01	4.20E 02	
02 B 104				TRANS-1,3-DICHLOROPROPENE	T	6.00E 04	6.00E 01	4.20E 02	
08 D 140				AMYL ACETATES	T	6.00E 04	6.00E 01	4.20E 02	
15 B 103				P-DIETHYL BENZENE	T	6.00E 04	6.00E 01	4.20E 02	
17 A 020*	P	W		NITROBENZENE	T	6.00E 04	6.00E 01	4.20E 02	
08 D 121				N-BUTYL ACETATE	T	6.00E 04	6.00E 01	4.20E 02	
15 A 120		W		ISOPROPYL BENZENE	T	6.00E 04	6.00E 01	4.20E 02	
10 C 020				ANILINE	T	6.00E 04	6.00E 01	4.20E 02	
15 B 102				M-DIETHYL BENZENE	T	6.00E 04	6.00E 01	4.20E 02	
08 D 122				SEC-BUTYL ACETATE	T	6.00E 04	6.00E 01	4.20E 02	
15 B 104				O-DIISOPROPYL BENZENE	T	6.00E 04	6.00E 01	4.20E 02	
04 A 050		W		EPICHLORHYDRIN	T	6.00E 04	6.00E 01	4.20E 02	

CYCLONE DUST QUENCH WATER, ECOLOGY IMPACT

DMEG NO.		COMPOUND NAME	TYPE	CONC E-6 G/L	DS	WDS G/S	LCCAT
08 A 040	W	ACETIC ACID	T	6.00E 04	6.00E 01	4.20E 02	
08 D 123		ISOBUTYL ACETATE	T	6.00E 04	6.00E 01	4.20E 02	
15 B 083		P-XYLENE	T	6.00E 04	6.00E 01	4.20E 02	
04 A 060	W	1-CHLORO-1,3-EPOXYPROPANE	T	6.00E 04	6.00E 01	4.20E 02	
02 A 343		1,3-DICHLOROPROPANE	T	6.00E 04	6.00E 01	4.20E 02	
08 D 143		ISOAMYL ACETATE	T	6.00E 04	6.00E 01	4.20E 02	
15 B 100	W	DIALKYL BENZENES (MW:134-191)	T	6.00E 04	6.00E 01	4.20E 02	
15 B 082		M-XYLENE	T	6.00E 04	6.00E 01	4.20E 02	
15 B 020		INDAN	T	6.00E 04	4.30E 01	3.00E 02	
72 A 010		IRON (AS FE+2)	D	4.90E 03	2.00E 01	1.40E 02	
38 A 010		ALUMINUM	D	1.10E 04	1.10E 01	7.70E 01	
08 A 080		VALERIC ACID	T	6.00E 04	7.72E 00	5.40E 01	
09 B 042		B-NAPHTHONITRILES	T	6.00E 04	7.62E 00	5.33E 01	
09 B 041		A-NAPHTHONITRILES	T	6.00E 04	7.62E 00	5.33E 01	
09 B 040	W	NAPHTHONITRILES	T	6.00E 04	7.62E 00	5.33E 01	
09 B 020	W	BENZONITRILE	T	6.00E 04	7.62E 00	5.33E 01	
08 A 100		SATURATED LONG CHAIN ACIDS (MW:116-201)	T	6.00E 04	6.80E 00	4.73E 01	
08 A 101		CAPROIC ACID	T	6.00E 04	6.80E 00	4.73E 01	
08 A 104		LAURIC ACID	T	6.00E 04	6.80E 00	4.73E 01	
08 A 103		CAPRIC ACID	T	6.00E 04	6.80E 00	4.73E 01	
08 A 102		CAPRYLIC ACID	T	6.00E 04	6.80E 00	4.73E 01	
08 A 180		ADIPIC ACID	T	6.00E 04	6.13E 00	4.30E 01	
08 B 060	W	B-PROPIOLACTONE	T	6.00E 04	6.00E 00	4.20E 01	
15 B 201		1,2,3,4-TETRAMETHYLBENZENE	T	6.00E 04	6.00E 00	4.20E 01	
17 B 060	W	1-CHLORO-4-NITROBENZENE	T	6.00E 04	6.00E 00	4.20E 01	
23 A 081		2-PHENYLPYRIDINE	T	6.00E 04	6.00E 00	4.20E 01	
08 D 101		N-PROPYL ACETATE	T	6.00E 04	6.00E 00	4.20E 01	
10 A 060		ETHANOLAMINE	T	6.00E 04	6.00E 00	4.20E 01	
15 B 202		1,2,3,5-TETRAMETHYLBENZENE	T	6.00E 04	6.00E 00	4.20E 01	
15 B 200		TETRAMETHYLBENZENES	T	6.00E 04	6.00E 00	4.20E 01	
01 A 200		OCTANES	T	6.00E 04	6.00E 00	4.20E 01	
03 B 020		1,4-DIOXANE	T	6.00E 04	6.00E 00	4.20E 01	
23 A 080	W	PHENYLPYRIDINES	T	6.00E 04	6.00E 00	4.20E 01	
05 A 122		2-METHYL-1-BUTANOL	T	6.00E 04	6.00E 00	4.20E 01	

CYCLONE DUST QUENCH WATER, ECOLOGY IMPACT

DMEG NO.			COMPOUND NAME	TYPE	CONC E-6 G/L	DS	WDS G/S	LCCAT
17 B 040		W	1-CHLORO-2-NITROBENZENE	T	6.00E 04	6.00E 00	4.20E 01	
05 A 121			N-PENTANOL	T	6.00E 04	6.00E 00	4.20E 01	
23 A 063			4-ETHYLPYRIDINE	T	6.00E 04	6.00E 00	4.20E 01	
23 A 122			2,4,6-COLLIDINE	T	6.00E 04	6.00E 00	4.20E 01	
23 A 064			4-N-PROPYLPYRIDINE	T	6.00E 04	6.00E 00	4.20E 01	
23 A 060		W	MONOSUBSTITUTED ALKYL PYRIDINES	T	6.00E 04	6.00E 00	4.20E 01	
04 B 080		W	2,2'-DICHLORODIETHYL ETHER	T	6.00E 04	6.00E 00	4.20E 01	
23 A 062			3-ETHYLPYRIDINE	T	6.00E 04	6.00E 00	4.20E 01	
05 A 100		W	ISOBUTYL ALCOHOL	T	6.00E 04	6.00E 00	4.20E 01	
08 D 100			PROPYL ACETATES	T	6.00E 04	6.00E 00	4.20E 01	
23 A 020		W	PYRIDINE	T	6.00E 04	6.00E 00	4.20E 01	
06 A 020		W	ETHYLENE GLYCOL	T	6.00E 04	6.00E 00	4.20E 01	
23 A 061			2-ETHYLPYRIDINE	T	6.00E 04	6.00E 00	4.20E 01	
10 A 160			CYCLOHEXYLAMINE	T	6.00E 04	6.00E 00	4.20E 01	
10 B 100			MORPHOLINE	T	6.00E 04	6.00E 00	4.20E 01	
01 A 201			N-OCTANE	T	6.00E 04	6.00E 00	4.20E 01	
23 A 121			5-ETHYL-2-METHYLPYRIDINE	T	6.00E 04	6.00E 00	4.20E 01	
05 A 124			3-METHYL-1-BUTANOL	T	6.00E 04	6.00E 00	4.20E 01	
15 B 203			1,2,4,5-TETRAMETHYLBENZENE	T	6.00E 04	6.00E 00	4.20E 01	
05 A 120		W	PENTANOLS (PRIMARY)	T	6.00E 04	6.00E 00	4.20E 01	
05 A 140		W	BENZYL ALCOHOL	T	6.00E 04	6.00E 00	4.20E 01	
05 A 123			2,2-DIMETHYL-1-PROPANOL	T	6.00E 04	6.00E 00	4.20E 01	
23 A 083			4-PHENYLPYRIDINE	T	6.00E 04	6.00E 00	4.20E 01	
04 B 040*	P	W	1,1'-DICHLORODIETHYL ETHER	T	6.00E 04	6.00E 00	4.20E 01	
23 A 082			3-PHENYLPYRIDINE	T	6.00E 04	6.00E 00	4.20E 01	
08 D 080			METHYL METHACRYLATE	T	6.00E 04	6.00E 00	4.20E 01	
23 A 120		W	COLLIDINES	T	6.00E 04	6.00E 00	4.20E 01	
07 B 100		W	CAMPHOR	T	6.00E 04	6.00E 00	4.20E 01	
82 A 010	P		CADMIUM	T	6.00E 04	6.00E 00	4.20E 01	
07 B 120			ACETOPHENONE	T	6.00E 04	6.00E 00	4.20E 01	
34 A 010			CALCIUM (AS CA+2)	D	< 5.00E 00<	5.40E 00	3.80E 01	
08 A 140			OLEIC ACID	T	6.00E 04	5.00E 00<	3.50E 01	
49 A 010	P		ARSENIC	D	5.40E 04	3.71E 00	2.60E 01	
76 A 010	P		NICKEL	T	6.00E 04	3.40E 00	2.40E 01	
				D	1.20E 02	2.83E 00	2.00E 01	
				D	< 2.00E 01<	2.40E 00	1.70E 01	
						2.00E 00<	1.40E 01	

CYCLONE DUST QUENCH WATER, ECOLOGY IMPACT

DMEG NO.		COMPOUND NAME	TYPE	CONC E-6 G/L	DS	WDS G/S	LCCAT
46 A 010	P	LEAD	D	9.90E 01	2.00E 00	1.40E 01	
06 A 040		PROPYLENE GLYCOL	T	6.00E 04	6.00E-01	4.20E 00	
08 D 320*	P	BUTYL BENZYL PHTHALATE	T	6.00E 04	6.00E-01	4.20E 00	
08 B 080		Y-BUTYROLACTONE	T	6.00E 04	6.00E-01	4.20E 00	
05 C 040	W	T-PENTANOL	T	6.00E 04	6.00E-01	4.20E 00	
05 A 080		N-BUTANOL	T	6.00E 04	6.00E-01	4.20E 00	
79 A 010	P	SILVER	S	2.00E 00	4.00E-01	2.80E 00	
81 A 010	P	ZINC	D	3.50E 01	3.50E-01	2.44E 00	
78 A 010	P	COPPER	D	1.20E 01	2.40E-01	1.70E 00	
54 A 010	P	SELENIUM	S	6.00E 00	2.40E-01	1.70E 00	
36 A 010		BARIUM	D	5.70E 02	2.30E-01	1.60E 00	
62 A 010		TITANIUM	D	1.80E 02	2.20E-01	1.53E 00	
33 A 010		MAGNESIUM	D	1.10E 04	1.30E-01	8.90E-01	
27 A 010		LITHIUM	S	4.00E 01	1.10E-01	7.40E-01	
65 A 010		VANADIUM	D	1.50E 01	1.00E-01	7.00E-01	
37 A 010		BORON	D	9.90E 02	4.00E-02	2.80E-01	
74 A 010		COBALT	S	9.00E 00	3.60E-02	2.52E-01	
68 A 010	P	CHROMIUM	D	< 5.00E 00<	2.00E-02<	1.40E-01	
71 A 010	P	MANGANESE	D	< 1.00E 00<	1.00E-02<	7.00E-02	
83 A 010	P	MERCURY	D	4.00E-01	1.60E-03	1.12E-02	
69 A 010		MOLYBDENUM	S	4.00E 00	5.71E-04	4.00E-03	
45 A 010		TIN	D	2.90E 03	0.00E-01	0.00E-01	
07 B 080*	P	ISOPHORONE	T	0.00E-01	0.00E-01	0.00E-01	5
16 A 160*	P	POLYCHLORINATED BENZENES	T	0.00E-01	0.00E-01	0.00E-01	2
02 A 340*	P	DICHLOROPROPANES	T	0.00E-01	0.00E-01	0.00E-01	1
10 C 140*	P W	BENZIDINE	T	0.00E-01	0.00E-01	0.00E-01	5
57 A 010		CHLORINE (AS CL-)	D	3.40E 04	0.00E-01	0.00E-01	
12 A 020*	P	N-NITROSODIMETHYLAMINE	T	0.00E-01	0.00E-01	0.00E-01	5
53 A 010		SULFUR	D	2.30E 04	0.00E-01	0.00E-01	
12 A 040*	P	N-NITROSODIETHYLAMINE	T	6.00E 04	0.00E-01	0.00E-01	
12 A 060*	P	N-NITROSODIPROPYLAMINE	T	0.00E-01	0.00E-01	0.00E-01	5
59 A 010		IODINE (AS I-)	S	6.00E 00	0.00E-01	0.00E-01	
08 D 320*	P	BUTYL BENZYL PHTHALATE	T	0.00E-01	0.00E-01	0.00E-01	6
15 A 040*	P W	TOLUENE	T	0.00E-01	0.00E-01	0.00E-01	2

CYCLONE DUST QUENCH WATER, ECOLOGY IMPACT

DMEG NO.		COMPOUND NAME	TYPE	CONC E-6 G/L	DS	WDS G/S	LCCAT
84 B 010		CERIUM	S	2.00E 00	0.00E-01	0.00E-01	
16 A 140* P		1,4-DICHLOROBENZENE	T	0.00E-01	0.00E-01	0.00E-01	2
16 A 100* P		1,2-DICHLOROBENZENE	T	0.00E-01	0.00E-01	0.00E-01	3
12 A 060* P		N-NITROSODIPROPYLAMINE	T	0.00E-01	0.00E-01	0.00E-01	6
16 A 200* P		CHLORONAPHTHALENES	T	0.00E-01	0.00E-01	0.00E-01	3
12 A 040* P		N-NITROSODIETHYLAMINE	T	0.00E-01	0.00E-01	0.00E-01	5
15 A 060* P	W	ETHYL BENZENE	T	0.00E-01	0.00E-01	0.00E-01	3
08 D 300* P		DI-2-ETHYLHEXYL PHTHALATE	T	0.00E-01	0.00E-01	0.00E-01	6
18 A 020* P	W	PHENOL	T	0.00E-01	0.00E-01	0.00E-01	5
07 B 080* P		ISOPHORONE	T	6.00E 04	0.00E-01	0.00E-01	
02 A 340* P		DICHLOROPROPANES	T	0.00E-01	0.00E-01	0.00E-01	2
10 C 140* P	W	BENZIDINE	T	0.00E-01	0.00E-01	0.00E-01	6
15 A 040* P	W	TOLUENE	T	0.00E-01	0.00E-01	0.00E-01	3
17 A 020* P	W	NITROBENZENE	T	0.00E-01	0.00E-01	0.00E-01	5
02 B 080* P	W	TETRACHLOROETHENE	T	0.00E-01	0.00E-01	0.00E-01	1
16 A 200* P		CHLORONAPHTHALENES	T	0.00E-01	0.00E-01	0.00E-01	2
12 A 020* P		N-NITROSODIMETHYLAMINE	T	0.00E-01	0.00E-01	0.00E-01	6
02 B 100* P	W	DICHLOROPROPENES	T	0.00E-01	0.00E-01	0.00E-01	1
08 D 300* P		DI-2-ETHYLHEXYL PHTHALATE	T	0.00E-01	0.00E-01	0.00E-01	5
12 A 040* P		N-NITROSODIETHYLAMINE	T	0.00E-01	0.00E-01	0.00E-01	6
28 A 010		SODIUM	D	2.20E 05	0.00E-01	0.00E-01	
02 B 120* P		HEXACHLOROBUTADIENE	T	6.00E 04	0.00E-01	0.00E-01	
02 B 120* P		HEXACHLOROBUTADIENE	T	0.00E-01	0.00E-01	0.00E-01	1
16 A 160* P		POLYCHLORINATED BENZENES	T	0.00E-01	0.00E-01	0.00E-01	3
02 B 140* P		HEXACHLOROCYCLOPENTADIENE	T	6.00E 04	0.00E-01	0.00E-01	
12 A 020* P		N-NITROSODIMETHYLAMINE	T	6.00E 04	0.00E-01	0.00E-01	
58 A 010		BROMINE	S	4.00E 01	0.00E-01	0.00E-01	
18 A 142* P		2,4-XYLENOL	T	0.00E-01	0.00E-01	0.00E-01	5
18 A 142* P		2,4-XYLENOL	T	0.00E-01	0.00E-01	0.00E-01	6
02 A 320* P		HEXACHLOROETHANE	T	6.00E 04	0.00E-01	0.00E-01	
02 B 100* P	W	DICHLOROPROPENES	T	0.00E-01	0.00E-01	0.00E-01	2
02 A 320* P		HEXACHLOROETHANE	T	0.00E-01	0.00E-01	0.00E-01	2
04 A 140* P		2-CHLOROETHYL VINYL ETHER	T	0.00E-01	0.00E-01	0.00E-01	4
04 A 140* P		2-CHLOROETHYL VINYL ETHER	T	0.00E-01	0.00E-01	0.00E-01	5

CYCLONE DUST QUENCH WATER, ECOLOGY IMPACT

DMEG NO.	COMPOUND NAME	TYPE	CONC E-6 G/L	DS	WDS G/S	LCCAT
04 A 160* P	A-CHLOROBUTYL ETHYL ETHER	T	6.00E 04	0.00E-01	0.00E-01	
04 A 160* P	A-CHLOROBUTYL ETHYL ETHER	T	0.00E-01	0.00E-01	0.00E-01	4
30 A 010	RUBIDIUM (AS RB+)	S	2.00E 01	0.00E-01	0.00E-01	
04 A 180* P	CHLOROPHENYL PHENYL ETHER	T	6.00E 04	0.00E-01	0.00E-01	
29 A 010	POTASSIUM	S	> 1.00E 04>	0.00E-01>	0.00E-01	
02 B 080* P W	TETRACHLOROETHENE	T	0.00E-01	0.00E-01	0.00E-01	2
43 A 010	SILICON	S	2.00E 03	0.00E-01	0.00E-01	
08 D 300* P	DI-2-ETHYLHEXYL PHTHALATE	T	6.00E 04	0.00E-01	0.00E-01	
61 A 010	YTTRIUM (AS Y+3)	S	2.00E 00	0.00E-01	0.00E-01	
63 A 010	ZIRCONIUM (AS ZR+4)	S	5.00E 00	0.00E-01	0.00E-01	
12 A 060* P	N-NITROSODIPROPYLAMINE	T	6.00E 04	0.00E-01	0.00E-01	
17 A 081* P	2,6-DINITROTOLUENE	T	0.00E-01	0.00E-01	0.00E-01	5
08 D 320* P	BUTYL BENZYL PHTHALATE	T	0.00E-01	0.00E-01	0.00E-01	5
02 B 120* P	HEXACHLOROBUTADIENE	T	0.00E-01	0.00E-01	0.00E-01	2
02 A 140* P	DIBROMOCHLOROMETHANE	T	0.00E-01	0.00E-01	0.00E-01	2
02 A 160* P	BROMOFORM	T	6.00E 04	0.00E-01	0.00E-01	
15 A 060* P W	ETHYL BENZENE	T	0.00E-01	0.00E-01	0.00E-01	2
02 A 160* P	BROMOFORM	T	0.00E-01	0.00E-01	0.00E-01	1
02 A 160* P	BROMOFORM	T	0.00E-01	0.00E-01	0.00E-01	2
19 A 020* P	2-CHLOROPHENOL	T	0.00E-01	0.00E-01	0.00E-01	6
02 A 320* P	HEXACHLOROETHANE	T	0.00E-01	0.00E-01	0.00E-01	1
19 A 040* P	2,4-DICHLOROPHENOL	T	0.00E-01	0.00E-01	0.00E-01	5
19 A 040* P	2,4-DICHLOROPHENOL	T	0.00E-01	0.00E-01	0.00E-01	6
18 A 020* P W	PHENOL	T	0.00E-01	0.00E-01	0.00E-01	6
19 A 060* P W	PENTACHLOROPHENOL	T	0.00E-01	0.00E-01	0.00E-01	5
19 A 060* P W	PENTACHLOROPHENOL	T	0.00E-01	0.00E-01	0.00E-01	6
07 B 080* P	ISOPHORONE	T	0.00E-01	0.00E-01	0.00E-01	6
56 A 010	FLUORINE (AS F-)	D	2.00E 03	0.00E-01	0.00E-01	
16 A 100* P	1,2-DICHLOROBENZENE	T	0.00E-01	0.00E-01	0.00E-01	2
19 B 022* P	CHLORINATED-M-CRESOLS	T	0.00E-01	0.00E-01	0.00E-01	5
19 B 022* P	CHLORINATED-M-CRESOLS	T	0.00E-01	0.00E-01	0.00E-01	6
16 A 120* P	1,3-DICHLOROBENZENE	T	0.00E-01	0.00E-01	0.00E-01	2
16 A 120* P	1,3-DICHLOROBENZENE	T	0.00E-01	0.00E-01	0.00E-01	3
20 A 020* P	2-NITROPHENOL	T	0.00E-01	0.00E-01	0.00E-01	5

CYCLONE DUST QUENCH WATER, ECOLOGY IMPACT

DMEG NO.	COMPOUND NAME	TYPE	CONC E-6 G/L	DS	WDS G/S	LCCAT
20 A 020* P	2-NITROPHENOL	T	0.00E-01	0.00E-01	0.00E-01	6
16 A 140* P	1,4-DICHLOROBENZENE	T	0.00E-01	0.00E-01	0.00E-01	3
35 A 010	STRONTIUM	D	1.10E 03	0.00E-01	0.00E-01	
20 A 060* P	4-NITROPHENOL	T	0.00E-01	0.00E-01	0.00E-01	5
20 A 060* P	4-NITROPHENOL	T	0.00E-01	0.00E-01	0.00E-01	6
02 B 140* P	HEXACHLOROCYCLOPENTADIENE	T	0.00E-01	0.00E-01	0.00E-01	1
02 B 140* P	HEXACHLOROCYCLOPENTADIENE	T	0.00E-01	0.00E-01	0.00E-01	2
16 A 200* P	CHLORONAPHTHALENES	T	6.00E 04	0.00E-01	0.00E-01	
20 A 101* P	2,4-DINITROPHENOL	T	0.00E-01	0.00E-01	0.00E-01	5
20 A 101* P	2,4-DINITROPHENOL	T	0.00E-01	0.00E-01	0.00E-01	6
31 A 010	CESIUM	S	4.00E 00	0.00E-01	0.00E-01	
04 A 140* P	2-CHLOROETHYL VINYL ETHER	T	6.00E 04	0.00E-01	0.00E-01	
39 A 010	GALLIUM	S	2.00E 01	0.00E-01	0.00E-01	
44 A 010	GERMANIUM	S	7.00E 00	0.00E-01	0.00E-01	
20 B 020* P W	4,6-DINITRO-O-CRESOL	T	0.00E-01	0.00E-01	0.00E-01	5
20 B 020* P W	4,6-DINITRO-O-CRESOL	T	0.00E-01	0.00E-01	0.00E-01	6
04 A 160* P	A-CHLOROBUTYL ETHYL ETHER	T	0.00E-01	0.00E-01	0.00E-01	5
17 A 020* P W	NITROBENZENE	T	0.00E-01	0.00E-01	0.00E-01	4
08 D 280* P W	PHTHALATE ESTERS (MW:194-279)	T	0.00E-01	0.00E-01	0.00E-01	5
08 D 280* P W	PHTHALATE ESTERS (MW:194-279)	T	0.00E-01	0.00E-01	0.00E-01	6
21 A 020* P	NAPHTHALENE	T	0.00E-01	0.00E-01	0.00E-01	2
21 A 020* P	NAPHTHALENE	T	0.00E-01	0.00E-01	0.00E-01	3
21 A 100* PH	ACENAPHTHENE	T	6.00E 04	0.00E-01	0.00E-01	
21 A 100* PH	ACENAPHTHENE	T	0.00E-01	0.00E-01	0.00E-01	2
17 A 081* P	2,6-DINITROTOLUENE	T	0.00E-01	0.00E-01	0.00E-01	4
21 A 120* PH	ACENAPHTHYLENE	T	6.00E 04	0.00E-01	0.00E-01	
21 A 120* PH	ACENAPHTHYLENE	T	0.00E-01	0.00E-01	0.00E-01	2
02 A 140* P	DIBROMOCHLOROMETHANE	T	6.00E 04	0.00E-01	0.00E-01	
02 A 140* P	DIBROMOCHLOROMETHANE	T	0.00E-01	0.00E-01	0.00E-01	1
17 A 084* P	2,4-DINITROTOLUENE	T	0.00E-01	0.00E-01	0.00E-01	4
17 A 084* P	2,4-DINITROTOLUENE	T	0.00E-01	0.00E-01	0.00E-01	5
21 A 180* P	PHENANTHRENE	T	6.00E 04	0.00E-01	0.00E-01	
21 A 180* P	PHENANTHRENE	T	0.00E-01	0.00E-01	0.00E-01	2
21 A 180* P	PHENANTHRENE	T	0.00E-01	0.00E-01	0.00E-01	3

CYCLONE DUST QUENCH WATER, ECOLOGY IMPACT

DMEG NO.	COMPOUND NAME	TYPE	CONC E-6 G/L	DS	WDS G/S	LCCAT
21 A 040* P	BENZ(A)ANTHRACENE	T	6.00E 04	0.00E-01	0.00E-01	
21 B 040* P	BENZ(A)ANTHRACENE	T	0.00E-01	0.00E-01	0.00E-01	2
21 B 040* P	BENZ(A)ANTHRACENE	T	0.00E-01	0.00E-01	0.00E-01	3
21 B 120* P	CHRYSENE	T	6.00E 04	0.00E-01	0.00E-01	
21 B 120* P	CHRYSENE	T	0.00E-01	0.00E-01	0.00E-01	2
21 B 120* P	CHRYSENE	T	0.00E-01	0.00E-01	0.00E-01	3
21 B 180* P	PYRENE	T	6.00E 04	0.00E-01	0.00E-01	
21 B 180* P	PYRENE	T	0.00E-01	0.00E-01	0.00E-01	2
21 B 180* P	PYRENE	T	0.00E-01	0.00E-01	0.00E-01	3
21 C 080* P	DIBENZ(A,H)ANTHRACENE	T	6.00E 04	0.00E-01	0.00E-01	
21 C 080* P	DIBENZ(A,H)ANTHRACENE	T	0.00E-01	0.00E-01	0.00E-01	2
21 C 080* P	DIBENZ(A,H)ANTHRACENE	T	0.00E-01	0.00E-01	0.00E-01	3
21 C 100* P	BENZO(A)PYRENE	T	6.00E 04	0.00E-01	0.00E-01	
21 C 100* P	BENZO(A)PYRENE	T	0.00E-01	0.00E-01	0.00E-01	2
21 C 100* P	BENZO(A)PYRENE	T	0.00E-01	0.00E-01	0.00E-01	3
21 D 080* PH	BENZO(GHI)PERYLENE	T	6.00E 04	0.00E-01	0.00E-01	
21 D 080* PH	BENZO(GHI)PERYLENE	T	0.00E-01	0.00E-01	0.00E-01	2
21 D 080* PH	BENZO(GHI)PERYLENE	T	0.00E-01	0.00E-01	0.00E-01	3
22 A 020* PH	FLUORENE	T	6.00E 04	0.00E-01	0.00E-01	
22 A 020* PH	FLUORENE	T	0.00E-01	0.00E-01	0.00E-01	2
22 A 020* PH	FLUORENE	T	0.00E-01	0.00E-01	0.00E-01	3
22 B 040* P	FLUORANTHENE	T	6.00E 04	0.00E-01	0.00E-01	
22 B 040* P	FLUORANTHENE	T	0.00E-01	0.00E-01	0.00E-01	2
22 B 040* P	FLUORANTHENE	T	0.00E-01	0.00E-01	0.00E-01	3
22 C 020* P	BENZO(K)FLUORANTHENE	T	6.00E 04	0.00E-01	0.00E-01	
22 C 020* P	BENZO(K)FLUORANTHENE	T	0.00E-01	0.00E-01	0.00E-01	2
22 C 020* P	BENZO(K)FLUORANTHENE	T	0.00E-01	0.00E-01	0.00E-01	3
22 C 080* P	BENZO(B)FLUORANTHENE	T	6.00E 04	0.00E-01	0.00E-01	
22 C 080* P	BENZO(B)FLUORANTHENE	T	0.00E-01	0.00E-01	0.00E-01	2
22 C 080* P	BENZO(B)FLUORANTHENE	T	0.00E-01	0.00E-01	0.00E-01	3
22 D 020* P	INDENO(1,2,3-CD)PYRENE	T	6.00E 04	0.00E-01	0.00E-01	
22 D 020* P	INDENO(1,2,3-CD)PYRENE	T	0.00E-01	0.00E-01	0.00E-01	2
22 D 020* P	INDENO(1,2,3-CD)PYRENE	T	0.00E-01	0.00E-01	0.00E-01	3
04 A 180* P	CHLOROPHENYL PHENYL ETHER	T	0.00E-01	0.00E-01	0.00E-01	4

CYCLONE DUST QUENCH WATER, ECOLOGY IMPACT

DMEG NO.	COMPOUND NAME	TYPE	CONC E-6 G/L	DS	WDS G/S	LCCAT
04 A 180* P	CHLOROPHENYL PHENYL ETHER	T	0.00E-01	0.00E-01	0.00E-01	5
04 B 020* P	1,1'-DICHLOROMETHYL ETHER	T	6.00E 04	0.00E-01	0.00E-01	
04 B 020* P	1,1'-DICHLOROMETHYL ETHER	T	0.00E-01	0.00E-01	0.00E-01	4
04 B 020* P	1,1'-DICHLOROMETHYL ETHER	T	0.00E-01	0.00E-01	0.00E-01	5
21 A 100* PH	ACENAPHTHENE	T	0.00E-01	0.00E-01	0.00E-01	3
04 B 040* P W	1,1'-DICHLORODIETHYL ETHER	T	0.00E-01	0.00E-01	0.00E-01	4
04 B 040* P W	1,1'-DICHLORODIETHYL ETHER	T	0.00E-01	0.00E-01	0.00E-01	5
21 A 120* PH	ACENAPHTHYLENE	T	0.00E-01	0.00E-01	0.00E-01	3
21 A 140* P	ANTHRACENE	T	6.00E 04	0.00E-01	0.00E-01	
21 A 140* P	ANTHRACENE	T	0.00E-01	0.00E-01	0.00E-01	2
21 A 140* P	ANTHRACENE	T	0.00E-01	0.00E-01	0.00E-01	3
16 A 020* P	CHLOROBENZENE	T	0.00E-01	0.00E-01	0.00E-01	2
16 A 020* P	CHLOROBENZENE	T	0.00E-01	0.00E-01	0.00E-01	3
19 A 020* P	2-CHLOROPHENOL	T	0.00E-01	0.00E-01	0.00E-01	5

GASIFIER ASH

AVERAGE FLOW RATE = 24.2 G/S

939.7 G EXTRACTED TOTAL ORGANIC LOADING = 640 MG/KG

TOTAL TCO = 48 MG/KG

21.23% ORGINIAL SAMPLE TO LC

LC TCO = 9.7 MG LG GRAV = 117.4 MG LC TOTAL = 127.1 MG

	ORGANIC LOADING
1	330.0
2	15.0
3	39.0
4	20.0
5	26.0
6	100.0
7	17.0

FLOW RATE = 24.20

STATE: SOLID, UNITS IN MICROGRAMS/G

IMPACT: HEALTH

EXPERIMENTALY DETERMINED DATA

SPARK SOURCE DATA

GASIFIER ASH, HEALTH IMPACT

DMEG NO.			COMPOUND NAME	TYPE	CONC E-6 G/G	DS	WDS G/S	LCCAT
16 A 220*		W	POLYCHLORINATED BIPHENYLS	T	3.90E 01	3.90E 04	9.43E 05	3
72 A 010			IRON (AS FE+2)	D	9.00E 04	3.00E 04	7.30E 05	
16 A 220*		W	POLYCHLORINATED BIPHENYLS	T	1.50E 01	1.50E 04	3.62E 05	2
21 C 100*	P	W	BENZO(A)PYRENE	T	3.90E 01	6.50E 02	1.60E 04	3
38 A 010			ALUMINUM	D	8.80E 04	5.50E 02	1.33E 04	
36 A 010			BARIUM	D	5.50E 03	5.50E 02	1.33E 04	
43 A 010			SILICON	D	1.40E 05	4.70E 02	1.12E 04	
71 A 010	P		MANGANESE	D	2.20E 02	4.40E 02	1.10E 04	
21 C 100*	P	W	BENZO(A)PYRENE	T	1.50E 01	2.50E 02	6.04E 03	2
68 A 010	P		CHROMIUM	S	1.00E 02	2.00E 02	4.83E 03	
76 A 010	P		NICKEL	S	7.50E 01	1.70E 02	4.03E 03	
32 A 010	P		BERYLLIUM	S	9.00E 00	1.50E 02	3.63E 03	
54 A 010	P		SELENIUM	D	1.50E 01	1.50E 02	3.62E 03	
21 C 080*	P		DIBENZ(A,H)ANTHRACENE	T	3.90E 01	1.40E 02	3.40E 03	3
34 A 010			CALCIUM (AS CA+2)	D	4.80E 04	1.00E 02	2.42E 03	
18 B 020*		W	CATECHOL	T	1.00E 02	1.00E 02	2.42E 03	6
18 A 100*		W	PHENYLPHENOLS	T	1.00E 02	1.00E 02	2.42E 03	6
18 A 140*		W	XYLENOLS	T	1.00E 02	1.00E 02	2.42E 03	6
18 A 101*			O-PHENYLPHENOL	T	1.00E 02	1.00E 02	2.42E 03	6
18 C 040*		W	2-NAPHTHOL	T	1.00E 02	1.00E 02	2.42E 03	6
18 A 102*			P-PHENYLPHENOL	T	1.00E 02	1.00E 02	2.42E 03	6
18 C 081*			1-INDANOL	T	1.00E 02	1.00E 02	2.42E 03	6
18 A 082*			M-ETHYLPHENOL	T	1.00E 02	1.00E 02	2.42E 03	6
18 A 144*			2,6-XYLENOL	T	1.00E 02	1.00E 02	2.42E 03	6
18 A 083*			P-ETHYLPHENOL	T	1.00E 02	1.00E 02	2.42E 03	6
18 A 145*			3,5-XYLENOL	T	1.00E 02	1.00E 02	2.42E 03	6
19 A 060*	P	W	PENTACHLOROPHENOL	T	1.00E 02	1.00E 02	2.42E 03	6
18 A 146*			3,4-XYLENOL	T	1.00E 02	1.00E 02	2.42E 03	6
19 B 020*		W	CHLORINATED CRESOLS	T	1.00E 02	1.00E 02	2.42E 03	6
18 A 160*		W	ETHYL CRESOLS	T	1.00E 02	1.00E 02	2.42E 03	6
19 B 021*			CHLORINATED-O-CRESOLS	T	1.00E 02	1.00E 02	2.42E 03	6
18 A 103*			M-PHENYLPHENOL	T	1.00E 02	1.00E 02	2.42E 03	6
19 B 022*	P		CHLORINATED-M-CRESOLS	T	1.00E 02	1.00E 02	2.42E 03	6
18 A 162*			4-ETHYL-O-CRESOL	T	1.00E 02	1.00E 02	2.42E 03	6

GASIFIER ASH, HEALTH IMPACT

DMEG NO.			COMPOUND NAME	TYPE	CONC E-6 G/G	DS	WDS G/S	LCCAT
19 B 023*			CHLORINATED-P-CRESOLS	T	1.00E 02	1.00E 02	2.42E 03	6
18 A 163*			2-ETHYL-P-CRESOL	T	1.00E 02	1.00E 02	2.42E 03	6
20 A 020*	P	W	2-NITROPHENOL	T	1.00E 02	1.00E 02	2.42E 03	6
18 A 180*		W	POLYALKYLPHENOLS (MW>135)	T	1.00E 02	1.00E 02	2.42E 03	6
18 A 141*			2,3-XYLENOL	T	1.00E 02	1.00E 02	2.42E 03	6
18 A 181*			2,4,6-TRIMETHYL METHYL PHENOL	T	1.00E 02	1.00E 02	2.42E 03	6
20 A 060*	P	W	4-NITROPHENOL	T	1.00E 02	1.00E 02	2.42E 03	6
18 A 161*			6-ETHYL-M-CRESOL	T	1.00E 02	1.00E 02	2.42E 03	6
20 A 080*		W	2-AMINO-4,6-DINITROPHENOL	T	1.00E 02	1.00E 02	2.42E 03	6
19 A 020*	P	W	2-CHLOROPHENOL	T	1.00E 02	1.00E 02	2.42E 03	6
20 A 100*		W	DINITROPHENOLS	T	1.00E 02	1.00E 02	2.42E 03	6
18 A 041*			M-CRESOL	T	1.00E 02	1.00E 02	2.42E 03	6
20 A 101*	P		2,4-DINITROPHENOL	T	1.00E 02	1.00E 02	2.42E 03	6
18 B 040*		W	1,3-DIHYDROXYBENZENE	T	1.00E 02	1.00E 02	2.42E 03	6
20 A 102*			2,5-DINITROPHENOL	T	1.00E 02	1.00E 02	2.42E 03	6
18 B 060*		W	1,4-DIHYDROXYBENZENE	T	1.00E 02	1.00E 02	2.42E 03	6
20 A 103*			2,6-DINITROPHENOL	T	1.00E 02	1.00E 02	2.42E 03	6
18 B 080*		W	1,2,3-TRIHYDROXYBENZENE	T	1.00E 02	1.00E 02	2.42E 03	6
20 A 120*		W	2,4,6-TRINITROPHENOL	T	1.00E 02	1.00E 02	2.42E 03	6
18 C 020*		W	1-NAPHTHOL	T	1.00E 02	1.00E 02	2.42E 03	6
20 B 020*	P	W	4,6-DINITRO-O-CRESOL	T	1.00E 02	1.00E 02	2.42E 03	6
18 A 081*			O-ETHYLPHENOL	T	1.00E 02	1.00E 02	2.42E 03	6
20 B 040*		W	DINITRO-P-CRESOLS	T	1.00E 02	1.00E 02	2.42E 03	6
18 C 080*		W	INDANOLS	T	1.00E 02	1.00E 02	2.42E 03	6
20 B 041*			3,5-DINITRO-P-CRESOL	T	1.00E 02	1.00E 02	2.42E 03	6
18 A 043*			P-CRESOL	T	1.00E 02	1.00E 02	2.42E 03	6
20 B 042*			2,6-DINITRO-P-CRESOL	T	1.00E 02	1.00E 02	2.42E 03	6
18 C 082*			4-INDANOL	T	1.00E 02	1.00E 02	2.42E 03	6
18 A 182*			4,6-DI-TERT-BUTYL-M-CRESOL	T	1.00E 02	1.00E 02	2.42E 03	6
18 A 142*	P		2,4-XYLENOL	T	1.00E 02	1.00E 02	2.42E 03	6
18 A 183*			2,6-DIMETHYL-4-HEPTYL PHENOL	T	1.00E 02	1.00E 02	2.42E 03	6
18 C 083*			5-INDANOL	T	1.00E 02	1.00E 02	2.42E 03	6
18 A 143*			2,5-XYLENOL	T	1.00E 02	1.00E 02	2.42E 03	6
19 A 040*	P	W	2,4-DICHLOROPHENOL	T	1.00E 02	1.00E 02	2.42E 03	6

GASIFIER ASH, HEALTH IMPACT

DMEG NO.				COMPOUND NAME	TYPE	CONC E-6 G/G	US	NDS G/S	LCCAT
18 A 042*				O-CRESOL	T	1.00E 02	1.00E 02	2.42E 03	6
18 A 120*			W	2,2'-DIHYDROXYDIPHENYL	T	1.00E 02	1.00E 02	2.42E 03	6
18 A 020*	P		W	PHENOL	T	1.00E 02	1.00E 02	2.42E 03	6
20 A 040*			W	3-NITROPHENOL	T	1.00E 02	1.00E 02	2.42E 03	6
18 A 040*			W	CRESOLS	T	1.00E 02	1.00E 02	2.42E 03	6
18 A 060*			W	2-METHOXYPHENOL	T	1.00E 02	1.00E 02	2.42E 03	6
18 A 080*			W	ETHYLPHENOLS	T	1.00E 02	1.00E 02	2.42E 03	6
83 A 010		P		MERCURY	D	1.70E 00	8.50E 01	2.10E 03	
02 A 380*			W	HEXACHLOROCYCLOHEXANE	T	3.30E 02	8.30E 01	2.00E 03	1
65 A 010				VANADIUM	S	4.10E 02	8.20E 01	2.00E 03	
33 A 010				MAGNESIUM	D	1.30E 04	7.22E 01	1.74E 03	
27 A 010				LITHIUM	S	4.80E 01	6.90E 01	1.70E 03	
48 A 010				PHOSPHORUS	D	2.00E 03	6.70E 01	1.61E 03	
49 A 010		P		ARSENIC	D	3.00E 01	6.00E 01	1.50E 03	
21 C 080*	P			DIBENZ(A,H)ANTHRACENE	T	1.50E 01	5.40E 01	1.30E 03	2
18 A 163*				2-ETHYL-P-CRESOL	T	2.60E 01	2.60E 01	6.30E 02	5
18 A 146*				3,4-XYLENOL	T	2.60E 01	2.60E 01	6.30E 02	5
18 A 160*			W	ETHYL CRESOLS	T	2.60E 01	2.60E 01	6.30E 02	5
19 A 040*	P		W	2,4-DICHLOROPHENOL	T	2.60E 01	2.60E 01	6.30E 02	5
18 B 020*			W	CATECHOL	T	2.60E 01	2.60E 01	6.30E 02	5
19 A 060*	P		W	PENTACHLOROPHENOL	T	2.60E 01	2.60E 01	6.30E 02	5
18 B 040*			W	1,3-DIHYDROXYBENZENE	T	2.60E 01	2.60E 01	6.30E 02	5
19 B 020*			W	CHLORINATED CRESOLS	T	2.60E 01	2.60E 01	6.30E 02	5
18 B 060*			W	1,4-DIHYDROXYBENZENE	T	2.60E 01	2.60E 01	6.30E 02	5
18 A 101*				O-PHENYLPHENOL	T	2.60E 01	2.60E 01	6.30E 02	5
20 A 101*		P		2,4-DINITROPHENOL	T	2.60E 01	2.60E 01	6.30E 02	5
18 A 161*				6-ETHYL-M-CRESOL	T	2.60E 01	2.60E 01	6.30E 02	5
18 A 141*				2,3-XYLENOL	T	2.60E 01	2.60E 01	6.30E 02	5
18 A 162*				4-ETHYL-O-CRESOL	T	2.60E 01	2.60E 01	6.30E 02	5
18 C 040*			W	2-NAPHTHOL	T	2.60E 01	2.60E 01	6.30E 02	5
18 A 120*			W	2,2'-DIHYDROXYDIPHENYL	T	2.60E 01	2.60E 01	6.30E 02	5
18 C 080*			W	INDANOLS	T	2.60E 01	2.60E 01	6.30E 02	5
18 A 100*			W	PHENYLPHENOLS	T	2.60E 01	2.60E 01	6.30E 02	5
18 C 081*				1-INDANOL	T	2.60E 01	2.60E 01	6.30E 02	5

GASIFIER ASH, HEALTH IMPACT

DMEG NO.			COMPOUND NAME	TYPE	CONC E-6 G/G	US	WDS G/S	LCCAT
20 B 042*			2,6-DINITRO-P-CRESOL	T	2.60E 01	2.60E 01	6.30E 02	5
18 A 182*			4,6-DI-TERT-BUTYL-M-CRESOL	T	2.60E 01	2.60E 01	6.30E 02	5
18 A 142*	P		2,4-XYLENOL	T	2.60E 01	2.60E 01	6.30E 02	5
18 C 020*		W	1-NAPHTHOL	T	2.60E 01	2.60E 01	6.30E 02	5
18 A 183*			2,6-DIMETHYL-4-HEPTYL PHENOL	T	2.60E 01	2.60E 01	6.30E 02	5
18 A 144*			2,6-XYLENOL	T	2.60E 01	2.60E 01	6.30E 02	5
20 A 100*		W	DINITROPHENOLS	T	2.60E 01	2.60E 01	6.30E 02	5
18 A 082*			M-ETHYLPHENOL	T	2.60E 01	2.60E 01	6.30E 02	5
18 A 042*			O-CRESOL	T	2.60E 01	2.60E 01	6.30E 02	5
18 A 145*			3,5-XYLENOL	T	2.60E 01	2.60E 01	6.30E 02	5
20 A 102*			2,5-DINITROPHENOL	T	2.60E 01	2.60E 01	6.30E 02	5
20 A 040*		W	3-NITROPHENOL	T	2.60E 01	2.60E 01	6.30E 02	5
18 A 020*	P	W	PHENOL	T	2.60E 01	2.60E 01	6.30E 02	5
19 B 021*			CHLORINATED-O-CRESOLS	T	2.60E 01	2.60E 01	6.30E 02	5
18 A 040*		W	CRESOLS	T	2.60E 01	2.60E 01	6.30E 02	5
19 B 022*	P		CHLORINATED-M-CRESOLS	T	2.60E 01	2.60E 01	6.30E 02	5
18 A 041*			M-CRESOL	T	2.60E 01	2.60E 01	6.30E 02	5
19 B 023*			CHLORINATED-P-CRESOLS	T	2.60E 01	2.60E 01	6.30E 02	5
18 A 103*			M-PHENYLPHENOL	T	2.60E 01	2.60E 01	6.30E 02	5
20 A 020*	P	W	2-NITROPHENOL	T	2.60E 01	2.60E 01	6.30E 02	5
18 A 180*		W	POLYALKYLPHENOLS (MW>135)	T	2.60E 01	2.60E 01	6.30E 02	5
20 B 041*			3,5-DINITRO-P-CRESOL	T	2.60E 01	2.60E 01	6.30E 02	5
18 A 060*		W	2-METHOXYPHENOL	T	2.60E 01	2.60E 01	6.30E 02	5
18 A 181*			2,4,6-TRIMETHYL METHYL PHENOL	T	2.60E 01	2.60E 01	6.30E 02	5
18 A 080*		W	ETHYLPHENOLS	T	2.60E 01	2.60E 01	6.30E 02	5
20 A 080*		W	2-AMINO-4,6-DINITROPHENOL	T	2.60E 01	2.60E 01	6.30E 02	5
18 A 081*			O-ETHYLPHENOL	T	2.60E 01	2.60E 01	6.30E 02	5
19 A 020*	P	W	2-CHLOROPHENOL	T	2.60E 01	2.60E 01	6.30E 02	5
18 C 083*			5-INDANOL	T	2.60E 01	2.60E 01	6.30E 02	5
20 B 040*		W	DINITRO-P-CRESOLS	T	2.60E 01	2.60E 01	6.30E 02	5
18 A 083*			P-ETHYLPHENOL	T	2.60E 01	2.60E 01	6.30E 02	5
18 A 102*			P-PHENYLPHENOL	T	2.60E 01	2.60E 01	6.30E 02	5
18 A 140*		W	XYLENOLS	T	2.60E 01	2.60E 01	6.30E 02	5
20 A 103*			2,6-DINITROPHENOL	T	2.60E 01	2.60E 01	6.30E 02	5

GASIFIER ASH, HEALTH IMPACT

DMEG NO.			COMPOUND NAME	TYPE	CONC E-6 G/G	DS	WDS G/S	LCCAT
18 B 080*		W	1,2,3-TRIHYDROXYBENZENE	T	2.60E 01	2.60E 01	6.30E 02	5
20 A 120*		W	2,4,6-TRINITROPHENOL	T	2.60E 01	2.60E 01	6.30E 02	5
18 A 043*			P-CRESOL	T	2.60E 01	2.60E 01	6.30E 02	5
20 B 020*	P	W	4,6-DINITRO-O-CRESOL	T	2.60E 01	2.60E 01	6.30E 02	5
20 A 060*	P	W	4-NITROPHENOL	T	2.60E 01	2.60E 01	6.30E 02	5
18 C 082*			4-INDANOL	T	2.60E 01	2.60E 01	6.30E 02	5
18 A 143*			2,5-XYLENOL	T	2.60E 01	2.60E 01	6.30E 02	5
62 A 010			TITANIUM	D	4.50E 03	2.50E 01	6.04E 02	
35 A 010			STRONTIUM	D	1.90E 03	2.10E 01	5.00E 02	
85 B 010			THORIUM	S	2.30E 01	1.80E 01	4.30E 02	
74 A 010			COBALT	S	2.30E 01	1.53E 01	3.71E 02	
63 A 010			ZIRCONIUM (AS ZR+4)	S	1.80E 02	1.20E 01	2.90E 02	
28 A 010			SODIUM	D	1.80E 04	1.12E 01	2.72E 02	
46 A 010		P	LEAD	S	5.00E 00	1.00E 01	2.42E 02	
78 A 010		P	COPPER	S	8.10E 01	8.10E 00	2.00E 02	
82 A 010		P	CADMIUM	S	8.00E-01	8.00E 00	1.93E 02	
02 A 380*		W	HEXACHLOROCYCLOHEXANE	T	1.50E 01	3.80E 00	9.10E 01	2
21 B 080*			3-METHYLCHOLANTHRENE	T	3.90E 01	3.54E 00	8.60E 01	3
56 A 010			FLUORINE (AS F-)	S	1.90E 02	2.53E 00	6.13E 01	
37 A 010			BORON	D	2.10E 02	2.30E 00	5.50E 01	
61 A 010			YTTRIUM (AS Y+3)	S	5.90E 01	2.00E 00	4.80E 01	
04 B 020*	P	W	1,1'-DICHLOROMETHYL ETHER	T	2.60E 01	1.73E 00	4.20E 01	5
21 B 080*			3-METHYLCHOLANTHRENE	T	1.50E 01	1.40E 00	3.30E 01	2
04 B 020*	P	W	1,1'-DICHLOROMETHYL ETHER	T	2.00E 01	1.33E 00	3.22E 01	4
79 A 010		P	SILVER	S	6.00E-01	1.20E 00	2.90E 01	
02 A 320*		P	HEXACHLOROETHANE	T	3.30E 02	1.10E 00	2.70E 01	1
02 B 140*	P	W	HEXACHLOROCYCLOPENTADIENE	T	3.30E 02	1.00E 00	2.42E 01	1
64 A 010			HAFNIUM, (AS HF+4)	S	1.00E 00	6.70E-01	1.61E 01	
81 A 010		P	ZINC	S	2.00E 01	4.00E-01	9.70E 00	
10 C 100*			1,4-DIAMINOBENZENE	T	1.00E 02	3.33E-01	8.10E 00	6
10 C 042*			3-AMINOTOLUENE	T	1.00E 02	3.03E-01	7.33E 00	6
10 C 040*			AMINOTOLUENES	T	1.00E 02	3.03E-01	7.33E 00	6
10 C 043*			4-AMINOTOLUENE	T	1.00E 02	3.03E-01	7.33E 00	6
10 C 041*			2-AMINOTOLUENE	T	1.00E 02	3.03E-01	7.33E 00	6

GASIFIER ASH, HEALTH IMPACT

DMEG NO.		CUMPOUND NAME	TYPE	CONC E-6 G/G	DS	WDS G/S	LCCAT
21 D 040*	W	DIBENZO(A,I)PYRENE	T	3.90E 01	3.00E-01	7.30E 00	3
21 B 040*	P	BENZ(A)ANTHRACENE	T	3.90E 01	3.00E-01	7.30E 00	3
12 A 040*	P	N-NITROSODIETHYLAMINE	T	1.00E 02	2.80E-01	6.72E 00	6
23 B 100*	W	DIHYDROACRIDINE	T	1.00E 02	2.04E-01	4.93E 00	6
10 C 220*		2-AMINONAPHTHALENE	T	1.00E 02	2.00E-01	4.83E 00	6
23 B 240*		DIBENZ(A,H)ACRIDINE	T	1.00E 02	1.50E-01	3.61E 00	6
23 B 220*		DIBENZ(A,J)ACRIDINE	T	1.00E 02	1.40E-01	3.30E 00	6
85 A 010		URANIUM	S	1.60E 01	1.33E-01	3.22E 00	
21 B 040*	P	BENZ(A)ANTHRACENE	T	1.50E 01	1.20E-01	2.80E 00	2
21 D 040*	W	DIBENZO(A,I)PYRENE	T	1.50E 01	1.20E-01	2.80E 00	2
08 B 060*	W	B-PROPIOLACTONE	T	1.00E 02	1.10E-01	2.54E 00	6
84 B 010		CERIUM	S	1.10E 02	1.00E-01	2.41E 00	
69 A 010		MOLYBDENUM	S	1.50E 01	1.00E-01	2.41E 00	
10 C 100*		1,4-DIAMINOBENZENE	T	2.60E 01	8.70E-02	2.10E 00	5
23 C 160*	W	DIBENZO(C,G)CARBAZOLE	T	2.60E 01	8.70E-02	2.10E 00	5
10 C 040*		AMINOTOLUENES	T	2.60E 01	7.90E-02	1.90E 00	5
10 C 041*		2-AMINOTOLUENE	T	2.60E 01	7.90E-02	1.90E 00	5
10 C 042*		3-AMINOTOLUENE	T	2.60E 01	7.90E-02	1.90E 00	5
10 C 043*		4-AMINOTOLUENE	T	2.60E 01	7.90E-02	1.90E 00	5
02 A 180		DIBROMODICHLOROMETHANE	T	3.30E 02	7.90E-02	1.90E 00	1
12 A 040*	P	N-NITROSODIETHYLAMINE	T	2.60E 01	7.22E-02	1.74E 00	5
13 A 100*	W	BENZENETHIOL	T	1.00E 02	6.70E-02	1.61E 00	6
10 C 080*		ANISIDINES	T	1.00E 02	6.70E-02	1.61E 00	6
23 C 160*	W	DIBENZO(C,G)CARBAZOLE	T	2.00E 01	6.70E-02	1.61E 00	4
10 C 081*		O-ANISIDINE	T	1.00E 02	6.70E-02	1.61E 00	6
10 C 082*		M-ANISIDINE	T	1.00E 02	6.70E-02	1.61E 00	6
10 C 083*		P-ANISIDINE	T	1.00E 02	6.70E-02	1.61E 00	6
39 A 010		GALLIUM	S	9.00E 00	6.00E-02	1.50E 00	
44 A 010		GERMANIUM	S	1.00E 00	5.90E-02	1.42E 00	
10 C 200*		1-AMINONAPHTHALENE	T	1.00E 02	5.90E-02	1.42E 00	6
21 B 105*		6-METHYL BENZO(C)PHENANTHRENE	T	3.90E 01	5.82E-02	1.40E 00	3
21 B 107*		8-METHYL BENZO(C)PHENANTHRENE	T	3.90E 01	5.82E-02	1.40E 00	3
21 B 101*		BENZO(C)PHENANTHRENE	T	3.90E 01	5.82E-02	1.40E 00	3
21 B 108*		ISOPROPYL BENZO(C)PHENANTHRENE	T	3.90E 01	5.82E-02	1.40E 00	3

GASIFIER ASH, HEALTH IMPACT

DMEG NO.		COMPOUND NAME	TYPE	CONC E-6 G/G	DS	WDS G/S	LCCAT
21 B 109*		6-ETHYL BENZO(C)PHENANTHRENE	T	3.90E 01	5.82E-02	1.40E 00	3
21 B 108*		2-ETHYL BENZO(C)PHENANTHRENE	T	3.90E 01	5.82E-02	1.40E 00	3
21 B 106*		7-METHYL BENZO(C)PHENANTHRENE	T	3.90E 01	5.82E-02	1.40E 00	3
21 B 100*		BENZO(C)PHENANTHRENE & ALKYL DERIVATIVES	T	3.90E 01	5.82E-02	1.40E 00	3
21 B 10A*		N-PROPYL BENZO(C)PHENANTHRENE	T	3.90E 01	5.82E-02	1.40E 00	3
21 B 102*		1-METHYL BENZO(C)PHENANTHRENE	T	3.90E 01	5.82E-02	1.40E 00	3
21 B 104*		5-METHYL BENZO(C)PHENANTHRENE	T	3.90E 01	5.82E-02	1.40E 00	3
21 B 103*		2-METHYL BENZO(C)PHENANTHRENE	T	3.90E 01	5.82E-02	1.40E 00	3
57 A 010		CHLORINE (AS CL-)	D	1.50E 02	5.80E-02	1.40E 00	
23 B 100*	W	DIHYDROACRIDINE	T	2.60E 01	5.30E-02	1.30E 00	5
10 C 220*		2-AMINONAPHTHALENE	T	2.60E 01	5.20E-02	1.30E 00	5
10 C 140*	P	BENZIDINE	T	1.00E 02	5.00E-02	1.20E 00	6
12 A 020*	P W	N-NITROSODIMETHYLAMINE	T	1.00E 02	5.00E-02	1.20E 00	6
02 A 320*	P	HEXACHLOROETHANE	T	1.50E 01	5.00E-02	1.20E 00	2
66 A 010		NIOBIUM (AS NB+3)	S	3.10E 01	4.80E-02	1.20E 00	
02 B 140*	P W	HEXACHLOROCYCLOPENTADIENE	T	1.50E 01	4.54E-02	1.10E 00	2
23 B 240*		DIBENZ(A,H)ACRIDINE	T	2.60E 01	3.90E-02	9.40E-01	5
23 B 220*		DIBENZ(A,J)ACRIDINE	T	2.60E 01	3.51E-02	8.50E-01	5
70 A 010		TUNGSTEN	S	1.00E 00	3.33E-02	8.10E-01	
08 C 060	W	6-HEXANELACTAM	T	1.00E 02	3.33E-02	8.10E-01	6
84 A 010		LANTHANUM	S	1.10E 02	3.23E-02	7.82E-01	
08 A 123		STEARIC ACID	T	1.00E 02	3.22E-02	7.80E-01	6
08 A 121		MYRISTIC ACID	T	1.00E 02	3.22E-02	7.80E-01	6
08 A 120	W	SATURATED LONG CHAIN ACIDS (MW:228-285)	T	1.00E 02	3.22E-02	7.80E-01	6
08 A 122		PALMITIC ACID	T	1.00E 02	3.22E-02	7.80E-01	6
02 B 120*	P	HEXACHLOROBUTADIENE	T	3.30E 02	2.80E-02	6.70E-01	1
08 B 060*	W	B-PROPIOLACTONE	T	2.60E 01	2.73E-02	6.62E-01	5
50 A 010	P	ANTIMONY	D	< 4.00E-01<	2.70E-02<	6.50E-01	
12 B 020	W	N-METHYL-N-NITROSOANILINE	T	1.00E 02	2.60E-02	6.20E-01	6
10 C 120		4-AMINOBIPHENYL	T	1.00E 02	2.50E-02	6.04E-01	6
21 B 108*		ISOPROPYL BENZO(C)PHENANTHRENE	T	1.50E 01	2.23E-02	5.41E-01	2
21 B 107*		8-METHYL BENZO(C)PHENANTHRENE	T	1.50E 01	2.23E-02	5.41E-01	2
21 B 105*		6-METHYL BENZO(C)PHENANTHRENE	T	1.50E 01	2.23E-02	5.41E-01	2
21 B 108*		2-ETHYL BENZO(C)PHENANTHRENE	T	1.50E 01	2.23E-02	5.41E-01	2

GASIFIER ASH, HEALTH IMPACT

DMEG NO.		COMPOUND NAME	TYPE	CONC E-6 G/G	DS	WDS G/S	LCCAT
21 B 104*		5-METHYL BENZO(C)PHENANTHRENE	T	1.50E 01	2.23E-02	5.41E-01	2
21 B 10A*		N-PROPYL BENZO(C)PHENANTHRENE	T	1.50E 01	2.23E-02	5.41E-01	2
21 B 100*		BENZO(C)PHENANTHRENE & ALKYL DERIVATIVES	T	1.50E 01	2.23E-02	5.41E-01	2
21 B 109*		6-ETHYL BENZO(C)PHENANTHRENE	T	1.50E 01	2.23E-02	5.41E-01	2
21 B 101*		BENZO(C)PHENANTHRENE	T	1.50E 01	2.23E-02	5.41E-01	2
21 B 103*		2-METHYL BENZO(C)PHENANTHRENE	T	1.50E 01	2.23E-02	5.41E-01	2
21 B 102*		1-METHYL BENZO(C)PHENANTHRENE	T	1.50E 01	2.23E-02	5.41E-01	2
21 B 106*		7-METHYL BENZO(C)PHENANTHRENE	T	1.50E 01	2.23E-02	5.41E-01	2
02 A 160*	P	BROMOFORM	T	3.30E 02	2.20E-02	5.32E-01	1
08 B 060*	W	B-PROPIOLACTONE	T	1.70E 01	1.80E-02	4.33E-01	7
10 C 082*		M-ANISIDINE	T	2.60E 01	1.73E-02	4.20E-01	5
10 C 080*		ANISIDINES	T	2.60E 01	1.73E-02	4.20E-01	5
10 C 081*		O-ANISIDINE	T	2.60E 01	1.73E-02	4.20E-01	5
13 A 100*	W	BENZENETHIOL	T	2.60E 01	1.73E-02	4.20E-01	5
10 C 083*		P-ANISIDINE	T	2.60E 01	1.73E-02	4.20E-01	5
10 C 200*		1-AMINONAPHTHALENE	T	2.60E 01	1.52E-02	3.70E-01	5
84 F 010		DYSPROSIUM	S	7.00E 00	1.52E-02	3.70E-01	
22 C 080*	P W	BENZO(B)FLUORANTHENE	T	3.90E 01	1.44E-02	3.50E-01	3
30 A 010		RUBIDIUM (AS RB+)	S	4.70E 01	1.30E-02	3.20E-01	
15 A 160	W	BIPHENYL	T	3.90E 01	1.30E-02	3.14E-01	3
12 A 020*	P W	N-NITROSODIMETHYLAMINE	T	2.60E 01	1.30E-02	3.14E-01	5
10 C 140*	P	BENZIDINE	T	2.60E 01	1.30E-02	3.14E-01	5
60 A 010		SCANDIUM	S	2.00E 01	1.30E-02	3.02E-01	
21 D 060		DIBENZO(A,L)PYRENE	T	3.90E 01	1.21E-02	2.94E-01	3
84 C 010		PRASEODYMIUM	S	1.60E 01	1.10E-02	2.60E-01	
02 B 100*	P	DICHLOROPROPENES	T	3.30E 02	9.70E-03	2.34E-01	1
84 E 010		SAMARIUM	S	1.30E 01	8.12E-03	2.00E-01	
21 A 180*	P W	PHENANTHRENE	T	3.90E 01	8.12E-03	2.00E-01	3
22 D 020*	P W	INDENO(1,2,3-CD)PYRENE	T	3.90E 01	8.12E-03	2.00E-01	3
22 C 020*	P	BENZO(K)FLUORANTHENE	T	3.90E 01	8.00E-03	1.92E-01	3
08 D 300*	P	DI-2-ETHYLHEXYL PHTHALATE	T	1.00E 02	6.70E-03	1.61E-01	6
08 D 280*	P W	PHTHALATE ESTERS (MW:194-279)	T	1.00E 02	6.70E-03	1.61E-01	6
21 B 120*	P	CHRYSENE	T	3.90E 01	5.90E-03	1.42E-01	3
17 A 084*	P	2,4-DINITROTOLUENE	T	2.60E 01	5.80E-03	1.40E-01	5

GASIFIER ASH, HEALTH IMPACT

DMEG NO.	COMPOUND NAME	TYPE	CONC E-6 G/G	US	WDS G/S	LCCAT
17 A 081* P	2,6-DINITROTOLUENE	T	2.60E 01	5.80E-03	1.40E-01	5
22 C 080* P W	BENZO(B)FLUORANTHENE	T	1.50E 01	5.60E-03	1.34E-01	2
17 A 084* P	2,4-DINITROTOLUENE	T	2.00E 01	4.44E-03	1.10E-01	4
17 A 081* P	2,6-DINITROTOLUENE	T	2.00E 01	4.44E-03	1.10E-01	4
31 A 010	CESIUM	S	8.00E 00	3.20E-03	7.74E-02	
21 A 180* P W	PHENANTHRENE	T	1.50E 01	3.12E-03	7.60E-02	2
22 D 020* P W	INDENO(1,2,3-CD)PYRENE	T	1.50E 01	3.12E-03	7.60E-02	2
22 C 020* P	BENZO(K)FLUORANTHENE	T	1.50E 01	3.10E-03	7.40E-02	2
02 A 140* P	DIBROMOCHLOROMETHANE	T	3.30E 02	2.40E-03	5.70E-02	1
21 B 120* P	CHRYSENE	T	1.50E 01	2.30E-03	5.50E-02	2
08 D 300* P	DI-2-ETHYLHEXYL PHTHALATE	T	2.60E 01	1.73E-03	4.20E-02	5
08 D 280* P W	PHTHALATE ESTERS (MW:194-279)	T	2.60E 01	1.73E-03	4.20E-02	5
17 A 020* P	NITROBENZENE	T	2.60E 01	1.73E-03	4.20E-02	5
12 A 060* P	N-NITROSODIPROPYLAMINE	T	1.00E 02	1.40E-03	3.40E-02	6
17 A 020* P	NITROBENZENE	T	2.00E 01	1.33E-03	3.22E-02	4
07 B 080* P	ISOPHORONE	T	1.00E 02	1.33E-03	3.22E-02	6
02 B 120* P	HEXACHLOROBUTADIENE	T	1.50E 01	1.30E-03	3.02E-02	2
16 A 160* P	POLYCHLORINATED BENZENES	T	3.90E 01	1.11E-03	2.70E-02	3
02 A 160* P	BROMOFORM	T	1.50E 01	1.00E-03	2.41E-02	2
04 A 140* P	2-CHLOROETHYL VINYL ETHER	T	2.60E 01	7.64E-04	1.90E-02	5
04 A 140* P	2-CHLOROETHYL VINYL ETHER	T	2.00E 01	5.90E-04	1.42E-02	4
02 B 100* P	DICHLOROPROPENES	T	1.50E 01	4.41E-04	1.10E-02	2
16 A 160* P	POLYCHLORINATED BENZENES	T	1.50E 01	4.30E-04	1.03E-02	2
12 A 060* P	N-NITROSODIPROPYLAMINE	T	2.60E 01	3.61E-04	8.73E-03	5
07 B 080* P	ISOPHORONE	T	2.60E 01	3.50E-04	8.40E-03	5
02 A 340* P	DICHLOROPROPANES	T	3.30E 02	3.30E-04	8.00E-03	1
04 A 180* P	CHLOROPHENYL PHENYL ETHER	T	2.60E 01	3.20E-04	7.80E-03	5
04 B 040* P	1,1'-DICHLORODIETHYL ETHER	T	2.60E 01	2.90E-04	7.00E-03	5
21 A 020* P	NAPHTHALENE	T	3.90E 01	2.60E-04	6.30E-03	3
04 A 180* P	CHLOROPHENYL PHENYL ETHER	T	2.00E 01	2.50E-04	6.00E-03	4
08 D 320* P	BUTYL BENZYL PHTHALATE	T	1.00E 02	2.32E-04	5.62E-03	6
21 A 140* P	ANTHRACENE	T	3.90E 01	2.30E-04	5.60E-03	3
04 B 040* P	1,1'-DICHLORODIETHYL ETHER	T	2.00E 01	2.22E-04	5.40E-03	4
16 A 200* P	CHLORONAPHTHALENES	T	3.90E 01	1.90E-04	4.50E-03	3

GASIFIER ASH, HEALTH IMPACT

DMEG NO.	COMPOUND NAME	TYPE	CONC E-6 G/G	DS	WDS G/S	LCCAT
02 B 080* P	TETRACHLOROETHENE	T	3.30E 02	1.70E-04	4.00E-03	1
22 B 040* P W	FLUORANTHENE	T	3.90E 01	1.40E-04	3.40E-03	3
02 A 140* P	DIBROMOCHLOROMETHANE	T	1.50E 01	1.10E-04	2.60E-03	2
21 A 020* P	NAPHTHALENE	T	1.50E 01	1.00E-04	2.41E-03	2
21 A 140* P	ANTHRACENE	T	1.50E 01	8.82E-05	2.13E-03	2
16 A 200* P	CHLORONAPHTHALENES	T	1.50E 01	7.14E-05	1.72E-03	2
08 D 320* P	BUTYL BENZYL PHTHALATE	T	2.60E 01	6.04E-05	1.50E-03	5
21 B 180* P	PYRENE	T	3.90E 01	5.70E-05	1.40E-03	3
22 B 040* P W	FLUORANTHENE	T	1.50E 01	5.40E-05	1.30E-03	2
16 A 100* P	1,2-DICHLOROBENZENE	T	3.90E 01	4.33E-05	1.04E-03	3
16 A 120* P	1,3-DICHLOROBENZENE	T	3.90E 01	4.33E-05	1.04E-03	3
16 A 020* P	CHLOROBENZENE	T	3.90E 01	3.54E-05	8.60E-04	3
15 A 040* P	TOLUENE	T	3.90E 01	3.54E-05	8.60E-04	3
15 A 060* P	ETHYL BENZENE	T	3.90E 01	3.00E-05	7.30E-04	3
16 A 140* P	1,4-DICHLOROBENZENE	T	3.90E 01	2.80E-05	6.74E-04	3
21 B 180* P	PYRENE	T	1.50E 01	2.20E-05	5.30E-04	2
16 A 100* P	1,2-DICHLOROBENZENE	T	1.50E 01	1.70E-05	4.03E-04	2
16 A 120* P	1,3-DICHLOROBENZENE	T	1.50E 01	1.70E-05	4.03E-04	2
02 A 340* P	DICHLOROPROPANES	T	1.50E 01	1.50E-05	3.62E-04	2
15 A 040* P	TOLUENE	T	1.50E 01	1.40E-05	3.30E-04	2
16 A 020* P	CHLOROBENZENE	T	1.50E 01	1.40E-05	3.30E-04	2
15 A 060* P	ETHYL BENZENE	T	1.50E 01	1.20E-05	2.80E-04	2
16 A 140* P	1,4-DICHLOROBENZENE	T	1.50E 01	1.10E-05	2.60E-04	2
02 B 080* P	TETRACHLOROETHENE	T	1.50E 01	7.50E-06	1.81E-04	2
45 A 010	TIN	S	5.00E-01	0.00E-01	0.00E-01	
22 A 020* PH	FLUORENE	T	3.90E 01	0.00E-01	0.00E-01	3
21 A 120* PH	ACENAPHTHYLENE	T	3.90E 01	0.00E-01	0.00E-01	3
04 A 160* P	A-CHLOROBUTYL ETHYL ETHER	T	2.00E 01	0.00E-01	0.00E-01	4
59 A 010	IODINE (AS I-)	S	2.00E-01	0.00E-01	0.00E-01	
29 A 010	POTASSIUM	D	8.60E 03	0.00E-01	0.00E-01	
04 A 160* P	A-CHLOROBUTYL ETHYL ETHER	T	2.60E 01	0.00E-01	0.00E-01	5
21 D 080* PH	BENZO(GHI)PERYLENE	T	3.90E 01	0.00E-01	0.00E-01	3
22 A 020* PH	FLUORENE	T	1.50E 01	0.00E-01	0.00E-01	2
84 D 010	NEODYMIUM	S	3.00E 01	0.00E-01	0.00E-01	

GASIFIER ASH, HEALTH IMPACT

DMEG NO.		COMPOUND NAME	TYPE	CONC E-6 G/G	DS	WDS G/S	LCCAT
53 A 010		SULFUR	D	8.80E 03	0.00E-01	0.00E-01	
21 D 080*	PH	BENZO(GHI)PERYLENE	T	1.50E 01	0.00E-01	0.00E-01	2
58 A 010		BROMINE	S	2.00E 00	0.00E-01	0.00E-01	
21 A 100*	PH	ACENAPHTHENE	T	1.50E 01	0.00E-01	0.00E-01	2
21 A 100*	PH	ACENAPHTHENE	T	3.90E 01	0.00E-01	0.00E-01	3
21 A 120*	PH	ACENAPHTHYLENE	T	1.50E 01	0.00E-01	0.00E-01	2

GASIFIER ASH

AVERAGE FLOW RATE = 24.2 G/S

939.7 G EXTRACTED TOTAL ORGANIC LOADING = 640 MG/KG

TOTAL TCO = 48 MG/KG

21.23% ORGINIAL SAMPLE TO LC

LC TCO = 9.7 MG LG GRAV = 117.4 MG LC TOTAL = 127.1 MG

LCCAT	ORGANIC LOADING
1	330.0
2	15.0
3	39.0
4	20.0
5	26.0
6	100.0
7	17.0

FLOW RATE = 24.20

STATE: SOLID, UNITS IN MICROGRAMS/G

IMPACT: ECOLOGY

EXPERIMENTALY DETERMINED DATA

SPARK SOURCE DATA

GASIFIER ASH, ECOLOGY IMPACT

DMEG NO.				COMPOUND NAME	TYPE	CONC E-6 G/G	DS	WDS G/S	LCCAT
02 A 380*			W	HEXACHLOROCYCLOHEXANE	T	3.30E 02	8.24E 04	2.00E 06	1
16 A 220*			W	POLYCHLORINATED BIPHENYLS	T	3.90E 01	3.90E 04	9.43E 05	3
48 A 010				PHOSPHORUS	D	2.00E 03	2.00E 04	4.83E 05	
16 A 220*			W	POLYCHLORINATED BIPHENYLS	T	1.50E 01	1.50E 04	3.62E 05	2
02 A 380*			W	HEXACHLOROCYCLOHEXANE	T	1.50E 01	3.74E 03	9.10E 04	2
72 A 010				IRON (AS FE+2)	D	9.00E 04	1.80E 03	4.40E 04	
38 A 010				ALUMINUM	D	8.80E 04	4.40E 02	1.10E 04	
08 D 281*				DIMETHYL PHTHALATE	T	1.00E 02	1.30E 02	3.02E 03	6
08 D 282*				DIETHYL PHTHALATE	T	1.00E 02	1.30E 02	3.02E 03	6
08 D 280*		P	W	PHTHALATE ESTERS (MW:194-279)	T	1.00E 02	1.30E 02	3.02E 03	6
08 D 283*				DI-N-BUTYL PHTHALATE	T	1.00E 02	1.30E 02	3.02E 03	6
76 A 010		P		NICKEL	S	7.50E 01	3.80E 01	9.10E 02	
08 D 280*		P	W	PHTHALATE ESTERS (MW:194-279)	T	2.60E 01	3.24E 01	7.90E 02	5
08 D 283*				DI-N-BUTYL PHTHALATE	T	2.60E 01	3.24E 01	7.90E 02	5
08 D 282*				DIETHYL PHTHALATE	T	2.60E 01	3.24E 01	7.90E 02	5
08 D 281*				DIMETHYL PHTHALATE	T	2.60E 01	3.24E 01	7.90E 02	5
62 A 010				TITANIUM	D	4.50E 03	2.81E 01	6.80E 02	
19 A 060*		P	W	PENTACHLOROPHENOL	T	1.00E 02	2.00E 01	4.83E 02	6
01 B 220			W	DICYCLOPENTADIENE	T	3.30E 02	1.70E 01	4.00E 02	1
34 A 010				CALCIUM (AS CA+2)	D	4.80E 04	1.50E 01	3.62E 02	
65 A 010				VANADIUM	S	4.10E 02	1.40E 01	3.30E 02	
36 A 010				BARIUM	D	5.50E 03	1.10E 01	2.70E 02	
71 A 010		P		MANGANESE	D	2.20E 02	1.10E 01	2.70E 02	
78 A 010		P		COPPER	S	8.10E 01	8.10E 00	2.00E 02	
19 A 060*		P	W	PENTACHLOROPHENOL	T	2.60E 01	5.20E 00	1.30E 02	5
20 A 102*				2,5-DINITROPHENOL	T	1.00E 02	5.00E 00	1.21E 02	6
20 A 100*			W	DINITROPHENOLS	T	1.00E 02	5.00E 00	1.21E 02	6
10 C 140*		P	W	BENZIDINE	T	1.00E 02	5.00E 00	1.21E 02	6
20 A 101*		P		2,4-DINITROPHENOL	T	1.00E 02	5.00E 00	1.21E 02	6
20 A 080*			W	2-AMINO-4,6-DINITROPHENOL	T	1.00E 02	5.00E 00	1.21E 02	6
10 C 220*			W	2-AMINONAPHTHALENE	T	1.00E 02	5.00E 00	1.21E 02	6
10 C 200*			W	1-AMINONAPHTHALENE	T	1.00E 02	5.00E 00	1.21E 02	6
20 A 103*				2,6-DINITROPHENOL	T	1.00E 02	5.00E 00	1.21E 02	6
82 A 010		P		CADMIUM	S	8.00E-01	4.00E 00	9.70E 01	

GASIFIER ASH, ECOLOGY IMPACT

DMEG NO.				COMPOUND NAME	TYPE	CONC E-6 G/G	DS	WDS G/S	LCCAT
49 A 010	P			ARSENIC	D	3.00E 01	3.00E 00	7.30E 01	
54 A 010	P			SELENIUM	D	1.50E 01	3.00E 00	7.30E 01	
68 A 010	P			CHROMIUM	S	1.00E 02	2.00E 00	4.83E 01	
16 A 100*	P			1,2-DICHLOROBENZENE	T	3.90E 01	2.00E 00	4.71E 01	3
16 A 060*				DIBROMOBENZENES	T	3.90E 01	2.00E 00	4.71E 01	3
16 A 040*				BROMOBENZENE	T	3.90E 01	2.00E 00	4.71E 01	3
16 B 020*		W		A-CHLOROTOLUENE	T	3.90E 01	2.00E 00	4.71E 01	3
16 A 160*	P			POLYCHLORINATED BENZENES	T	3.90E 01	2.00E 00	4.71E 01	3
16 A 162*				HEXACHLOROBENZENE	T	3.90E 01	2.00E 00	4.71E 01	3
16 B 041*				1,2-BIS(CHLOROMETHYBENZENE	T	3.90E 01	2.00E 00	4.71E 01	3
16 A 140*	P			1,4-DICHLOROBENZENE	T	3.90E 01	2.00E 00	4.71E 01	3
16 A 083*				1-BROMO-4-CHLOROBENZENE	T	3.90E 01	2.00E 00	4.71E 01	3
16 A 082*				1-BROMO-3-CHLOROBENZENE	T	3.90E 01	2.00E 00	4.71E 01	3
16 B 042*				1,3-BIS(CHLOROMETHYL)BENZENE	T	3.90E 01	2.00E 00	4.71E 01	3
16 A 120*	P			1,3-DICHLOROBENZENE	T	3.90E 01	2.00E 00	4.71E 01	3
21 A 020*	P			NAPHTHALENE	T	3.90E 01	2.00E 00	4.71E 01	3
16 B 040*				BIS(CHLOROMETHYL)BENZENES	T	3.90E 01	2.00E 00	4.71E 01	3
16 A 061*				1,2-DIBROMOBENZENE	T	3.90E 01	2.00E 00	4.71E 01	3
16 A 062*				1,3-DIBROMOBENZENE	T	3.90E 01	2.00E 00	4.71E 01	3
16 A 081*				1-BROMO-2-CHLOROBENZENE	T	3.90E 01	2.00E 00	4.71E 01	3
16 A 080*				BROMOCHLOROBENZENES	T	3.90E 01	2.00E 00	4.71E 01	3
16 A 063*				1,4-DIBROMOBENZENE	T	3.90E 01	2.00E 00	4.71E 01	3
16 B 043*				1,4-BIS(CHLOROMETHYL)BENZENE	T	3.90E 01	2.00E 00	4.71E 01	3
16 A 161*				1,2,4-TRICHLOROBENZENE	T	3.90E 01	2.00E 00	4.71E 01	3
16 A 020*	P			CHLOROBENZENE	T	3.90E 01	2.00E 00	4.71E 01	3
02 B 104*				TRANS-1,3-DICHLOROPROPENE	T	3.30E 02	1.70E 00	4.00E 01	1
02 A 340*	P			DICHLOROPROPANES	T	3.30E 02	1.70E 00	4.00E 01	1
02 B 080*	P	W		TETRACHLOROETHENE	T	3.30E 02	1.70E 00	4.00E 01	1
02 B 103*				CIS-1,3-DICHLOROPROPENE	T	3.30E 02	1.70E 00	4.00E 01	1
02 B 100*	P	W		DICHLOROPROPENES	T	3.30E 02	1.70E 00	4.00E 01	1
02 A 343*				1,3-DICHLOROPROPANE	T	3.30E 02	1.70E 00	4.00E 01	1
20 A 101*	P			2,4-DINITROPHENOL	T	2.60E 01	1.30E 00	3.14E 01	5
20 A 100*		W		DINITROPHENOLS	T	2.60E 01	1.30E 00	3.14E 01	5
20 A 103*				2,6-DINITROPHENOL	T	2.60E 01	1.30E 00	3.14E 01	5

GASIFIER ASH, ECOLOGY IMPACT

DMEG NO.			COMPOUND NAME	TYPE	CONC E-6 G/G	DS	WDS G/S	LCCAT
20 A 080*		W	2-AMINO-4,6-DINITROPHENOL	T	2.60E 01	1.30E 00	3.14E 01	5
10 C 220*		W	2-AMINONAPHTHALENE	T	2.60E 01	1.30E 00	3.14E 01	5
20 A 102*			2,5-DINITROPHENOL	T	2.60E 01	1.30E 00	3.14E 01	5
10 C 140*	P	W	BENZIDINE	T	2.60E 01	1.30E 00	3.14E 01	5
10 C 200*		W	1-AMINONAPHTHALENE	T	2.60E 01	1.30E 00	3.14E 01	5
18 A 182*			4,6-DI-TERT-BUTYL-M-CRESOL	T	1.00E 02	1.00E 00	2.42E 01	6
20 B 042*			2,6-DINITRO-P-CRESOL	T	1.00E 02	1.00E 00	2.42E 01	6
18 A 145*			3,5-XYLENOL	T	1.00E 02	1.00E 00	2.42E 01	6
18 A 082*			M-ETHYLPHENOL	T	1.00E 02	1.00E 00	2.42E 01	6
18 A 043*			P-CRESOL	T	1.00E 02	1.00E 00	2.42E 01	6
18 A 101*			O-PHENYLPHENOL	T	1.00E 02	1.00E 00	2.42E 01	6
18 A 160*		W	ETHYL CRESOLS	T	1.00E 02	1.00E 00	2.42E 01	6
18 A 120*		W	2,2'-DIHYDROXYDIPHENYL	T	1.00E 02	1.00E 00	2.42E 01	6
18 A 080*		W	ETHYLPHENOLS	T	1.00E 02	1.00E 00	2.42E 01	6
81 A 010	P		ZINC	S	2.00E 01	1.00E 00	2.42E 01	
18 A 161*			6-ETHYL-M-CRESOL	T	1.00E 02	1.00E 00	2.42E 01	6
18 A 140*		W	XYLENOLS	T	1.00E 02	1.00E 00	2.42E 01	6
18 A 102*			P-PHENYLPHENOL	T	1.00E 02	1.00E 00	2.42E 01	6
18 A 060*		W	2-METHOXYPHENOL	T	1.00E 02	1.00E 00	2.42E 01	6
20 B 020*	P	W	4,6-DINITRO-O-CRESOL	T	1.00E 02	1.00E 00	2.42E 01	6
18 A 100*		W	PHENYLPHENOLS	T	1.00E 02	1.00E 00	2.42E 01	6
18 A 143*			2,5-XYLENOL	T	1.00E 02	1.00E 00	2.42E 01	6
20 B 040*		W	DINITRO-P-CRESOLS	T	1.00E 02	1.00E 00	2.42E 01	6
18 A 144*			2,6-XYLENOL	T	1.00E 02	1.00E 00	2.42E 01	6
20 B 041*			3,5-DINITRO-P-CRESOL	T	1.00E 02	1.00E 00	2.42E 01	6
18 C 040*		W	2-NAPHTHOL	T	1.00E 02	1.00E 00	2.42E 01	6
19 B 020*		W	CHLORINATED CRESOLS	T	1.00E 02	1.00E 00	2.42E 01	6
18 A 103*			M-PHENYLPHENOL	T	1.00E 02	1.00E 00	2.42E 01	6
18 A 183*			2,6-DIMETHYL-4-HEPTYL PHENOL	T	1.00E 02	1.00E 00	2.42E 01	6
19 B 022*	P		CHLORINATED-M-CRESOLS	T	1.00E 02	1.00E 00	2.42E 01	6
16 B 020*		W	CATECHOL	T	1.00E 02	1.00E 00	2.42E 01	6
18 A 081*			O-ETHYLPHENOL	T	1.00E 02	1.00E 00	2.42E 01	6
18 C 083*			5-INDANOL	T	1.00E 02	1.00E 00	2.42E 01	6
18 A 083*			P-ETHYLPHENOL	T	1.00E 02	1.00E 00	2.42E 01	6

GASIFIER ASH, ECOLOGY IMPACT

DMEG NO.				COMPOUND NAME	TYPE	CONC E-6 G/G	DS	WDS G/S	LCCAT
19	A	020*	P	2-CHLOROPHENOL	T	1.00E 02	1.00E 00	2.42E 01	6
18	A	163*		2-ETHYL-P-CRESOL	T	1.00E 02	1.00E 00	2.42E 01	6
19	A	040*	P	2,4-DICHLOROPHENOL	T	1.00E 02	1.00E 00	2.42E 01	6
20	A	060*	P	4-NITROPHENOL	T	1.00E 02	1.00E 00	2.42E 01	6
18	A	180*	W	POLYALKYLPHENOLS (MW>135)	T	1.00E 02	1.00E 00	2.42E 01	6
18	A	042*		O-CRESOL	T	1.00E 02	1.00E 00	2.42E 01	6
18	A	181*		2,4,6-TRIMETHYL METHYL PHENOL	T	1.00E 02	1.00E 00	2.42E 01	6
23	B	080*	W	ACRIDINE	T	1.00E 02	1.00E 00	2.42E 01	6
18	C	080*	W	INDANOLS	T	1.00E 02	1.00E 00	2.42E 01	6
18	A	146*		3,4-XYLENOL	T	1.00E 02	1.00E 00	2.42E 01	6
18	C	081*		1-INDANOL	T	1.00E 02	1.00E 00	2.42E 01	6
18	A	041*		M-CRESOL	T	1.00E 02	1.00E 00	2.42E 01	6
18	B	080*	W	1,2,3-TRIHYDROXYBENZENE	T	1.00E 02	1.00E 00	2.42E 01	6
19	B	023*		CHLORINATED-P-CRESOLS	T	1.00E 02	1.00E 00	2.42E 01	6
18	A	162*		4-ETHYL-O-CRESOL	T	1.00E 02	1.00E 00	2.42E 01	6
20	A	120*		2,4,6-TRINITROPHENOL	T	1.00E 02	1.00E 00	2.42E 01	6
18	A	040*	W	CRESOLS	T	1.00E 02	1.00E 00	2.42E 01	6
18	A	142*	P	2,4-XYLENOL	T	1.00E 02	1.00E 00	2.42E 01	6
18	B	060*	W	1,4-DIHYDROXYBENZENE	T	1.00E 02	1.00E 00	2.42E 01	6
20	A	040*		3-NITROPHENOL	T	1.00E 02	1.00E 00	2.42E 01	6
18	A	141*		2,3-XYLENOL	T	1.00E 02	1.00E 00	2.42E 01	6
18	C	020*	W	1-NAPHTHOL	T	1.00E 02	1.00E 00	2.42E 01	6
18	B	040*	W	1,3-DIHYDROXYBENZENE	T	1.00E 02	1.00E 00	2.42E 01	6
18	A	020*	P W	PHENOL	T	1.00E 02	1.00E 00	2.42E 01	6
19	B	021*		CHLORINATED-O-CRESOLS	T	1.00E 02	1.00E 00	2.42E 01	6
18	C	082*		4-INDANOL	T	1.00E 02	1.00E 00	2.42E 01	6
20	A	020*	P	2-NITROPHENOL	T	1.00E 02	1.00E 00	2.42E 01	6
26	B	040	W	TRITOTYL PHOSPHATES	T	1.70E 01	8.50E-01	2.10E 01	7
32	A	010	P	BERYLLIUM	S	9.00E 00	8.20E-01	2.00E 01	
33	A	010		MAGNESIUM	D	1.30E 04	7.64E-01	1.90E 01	
16	B	041*		1,2-BIS(CHLOROMETHYBENZENE	T	1.50E 01	7.50E-01	1.81E 01	2
16	B	020*	W	A-CHLOROTOLUENE	T	1.50E 01	7.50E-01	1.81E 01	2
16	A	083*		1-BROMO-4-CHLOROBENZENE	T	1.50E 01	7.50E-01	1.81E 01	2
16	A	160*	P	POLYCHLORINATED BENZENES	T	1.50E 01	7.50E-01	1.81E 01	2

GASIFIER ASH, ECOLOGY IMPACT

DMEG NO.		COMPOUND NAME	TYPE	CONC E-6 G/G	DS	WDS G/S	LCCAT
16 A 040*		BROMOBENZENE	T	1.50E 01	7.50E-01	1.81E 01	2
16 A 063*		1,4-DIBROMOBENZENE	T	1.50E 01	7.50E-01	1.81E 01	2
16 A 100*	P	1,2-DICHLOROBENZENE	T	1.50E 01	7.50E-01	1.81E 01	2
16 A 140*	P	1,4-DICHLOROBENZENE	T	1.50E 01	7.50E-01	1.81E 01	2
16 A 082*		1-BROMO-3-CHLOROBENZENE	T	1.50E 01	7.50E-01	1.81E 01	2
16 B 040*		BIS(CHLOROMETHYL)BENZENES	T	1.50E 01	7.50E-01	1.81E 01	2
16 A 081*		1-BROMO-2-CHLOROBENZENE	T	1.50E 01	7.50E-01	1.81E 01	2
16 A 062*		1,3-DIBROMOBENZENE	T	1.50E 01	7.50E-01	1.81E 01	2
21 A 020*	P	NAPHTHALENE	T	1.50E 01	7.50E-01	1.81E 01	2
16 A 060*		DIBROMOBENZENES	T	1.50E 01	7.50E-01	1.81E 01	2
16 A 120*	P	1,3-DICHLOROBENZENE	T	1.50E 01	7.50E-01	1.81E 01	2
16 A 020*	P	CHLOROBENZENE	T	1.50E 01	7.50E-01	1.81E 01	2
16 B 043*		1,4-BIS(CHLOROMETHYL)BENZENE	T	1.50E 01	7.50E-01	1.81E 01	2
16 A 080*		BROMOCHLOROBENZENES	T	1.50E 01	7.50E-01	1.81E 01	2
16 A 161*		1,2,4-TRICHLOROBENZENE	T	1.50E 01	7.50E-01	1.81E 01	2
16 A 061*		1,2-DIBROMOBENZENE	T	1.50E 01	7.50E-01	1.81E 01	2
16 B 042*		1,3-BIS(CHLOROMETHYL)BENZENE	T	1.50E 01	7.50E-01	1.81E 01	2
16 A 162*		HEXACHLOROBENZENE	T	1.50E 01	7.50E-01	1.81E 01	2
27 A 010		LITHIUM	S	4.80E 01	6.40E-01	1.54E 01	
08 D 120*		BUTYL ACETATES	T	1.00E 02	5.00E-01	1.21E 01	6
10 A 080*	W	1,2-DIAMINOETHANE	T	1.00E 02	5.00E-01	1.21E 01	6
08 D 122*		SEC-BUTYL ACETATE	T	1.00E 02	5.00E-01	1.21E 01	6
08 D 142*		SEC-AMYL ACETATE	T	1.00E 02	5.00E-01	1.21E 01	6
08 A 040*	W	ACETIC ACID	T	1.00E 02	5.00E-01	1.21E 01	6
08 D 123*		ISOBUTYL ACETATE	T	1.00E 02	5.00E-01	1.21E 01	6
08 D 143*		ISOAMYL ACETATE	T	1.00E 02	5.00E-01	1.21E 01	6
10 C 020*		ANILINE	T	1.00E 02	5.00E-01	1.21E 01	6
08 D 141*		N-AMYL ACETATE	T	1.00E 02	5.00E-01	1.21E 01	6
08 D 121*		N-BUTYL ACETATE	T	1.00E 02	5.00E-01	1.21E 01	6
08 D 140*		AMYL ACETATES	T	1.00E 02	5.00E-01	1.21E 01	6
46 A 010	P	LEAD	S	5.00E 00	5.00E-01	1.21E 01	
74 A 010		COBALT	S	2.30E 01	4.60E-01	1.11E 01	
18 A 145*		3,5-XYLENOL	T	2.60E 01	2.60E-01	6.30E 00	5
18 A 060*	W	2-METHOXYPHENOL	T	2.60E 01	2.60E-01	6.30E 00	5

GASIFIER ASH, ECOLOGY IMPACT

DMEG NO.			COMPOUND NAME	TYPE	CONC E-6 G/G	DS	WDS G/S	LCCAT
18 C 083*			5-INDANOL	T	2.60E 01	2.60E-01	6.30E 00	5
18 A 103*			M-PHENYLPHENOL	T	2.60E 01	2.60E-01	6.30E 00	5
18 A 146*			3,4-XYLENOL	T	2.60E 01	2.60E-01	6.30E 00	5
18 A 043*			P-CRESOL	T	2.60E 01	2.60E-01	6.30E 00	5
20 B 041*			3,5-DINITRO-P-CRESOL	T	2.60E 01	2.60E-01	6.30E 00	5
18 C 040*		W	2-NAPHTHOL	T	2.60E 01	2.60E-01	6.30E 00	5
18 C 080*		W	INDANOLS	T	2.60E 01	2.60E-01	6.30E 00	5
18 A 101*			O-PHENYLPHENOL	T	2.60E 01	2.60E-01	6.30E 00	5
18 A 082*			M-ETHYLPHENOL	T	2.60E 01	2.60E-01	6.30E 00	5
18 A 161*			6-ETHYL-M-CRESOL	T	2.60E 01	2.60E-01	6.30E 00	5
20 A 120*			2,4,6-TRINITROPHENOL	T	2.60E 01	2.60E-01	6.30E 00	5
19 B 021*			CHLORINATED-O-CRESOLS	T	2.60E 01	2.60E-01	6.30E 00	5
18 C 020*		W	1-NAPHTHOL	T	2.60E 01	2.60E-01	6.30E 00	5
18 A 042*			O-CRESOL	T	2.60E 01	2.60E-01	6.30E 00	5
18 A 081*			O-ETHYLPHENOL	T	2.60E 01	2.60E-01	6.30E 00	5
23 B 080*		W	ACRIDINE	T	2.60E 01	2.60E-01	6.30E 00	5
18 A 102*			P-PHENYLPHENOL	T	2.60E 01	2.60E-01	6.30E 00	5
18 A 181*			2,4,6-TRIMETHYL METHYL PHENOL	T	2.60E 01	2.60E-01	6.30E 00	5
18 A 080*		W	ETHYLPHENOLS	T	2.60E 01	2.60E-01	6.30E 00	5
18 A 160*		W	ETHYL CRESOLS	T	2.60E 01	2.60E-01	6.30E 00	5
18 C 082*			4-INDANOL	T	2.60E 01	2.60E-01	6.30E 00	5
18 A 140*		W	XYLENOLS	T	2.60E 01	2.60E-01	6.30E 00	5
19 B 023*			CHLORINATED-P-CRESOLS	T	2.60E 01	2.60E-01	6.30E 00	5
18 A 162*			4-ETHYL-O-CRESOL	T	2.60E 01	2.60E-01	6.30E 00	5
19 B 020*		W	CHLORINATED CRESOLS	T	2.60E 01	2.60E-01	6.30E 00	5
18 A 100*		W	PHENYLPHENOLS	T	2.60E 01	2.60E-01	6.30E 00	5
19 A 040*	P		2,4-DICHLOROPHENOL	T	2.60E 01	2.60E-01	6.30E 00	5
18 A 143*			2,5-XYLENOL	T	2.60E 01	2.60E-01	6.30E 00	5
20 B 040*		W	DINITRO-P-CRESOLS	T	2.60E 01	2.60E-01	6.30E 00	5
18 A 144*			2,6-XYLENOL	T	2.60E 01	2.60E-01	6.30E 00	5
18 A 180*		W	POLYALKYLPHENOLS (MW>135)	T	2.60E 01	2.60E-01	6.30E 00	5
18 B 040*		W	1,3-DIHYDROXYBENZENE	T	2.60E 01	2.60E-01	6.30E 00	5
18 A 083*			P-ETHYLPHENOL	T	2.60E 01	2.60E-01	6.30E 00	5
20 B 042*			2,6-DINITRO-P-CRESOL	T	2.60E 01	2.60E-01	6.30E 00	5

GASIFIER ASH, ECOLOGY IMPACT

OMEG NO.			COMPOUND NAME	TYPE	CONC E-6 G/G	DS	WDS G/S	LCCAT
18	A 120*	W	2,2'-DIHYDROXYDIPHENYL	T	2.60E 01	2.60E-01	6.30E 00	5
19	B 022*	P	CHLORINATED-M-CRESOLS	T	2.60E 01	2.60E-01	6.30E 00	5
18	B 020*	W	CATECHOL	T	2.60E 01	2.60E-01	6.30E 00	5
18	A 041*		M-CRESOL	T	2.60E 01	2.60E-01	6.30E 00	5
18	A 163*		2-ETHYL-P-CRESOL	T	2.60E 01	2.60E-01	6.30E 00	5
18	B 080*	W	1,2,3-TRIHYDROXYBENZENE	T	2.60E 01	2.60E-01	6.30E 00	5
20	B 020*	P W	4,6-DINITRO-O-CRESOL	T	2.60E 01	2.60E-01	6.30E 00	5
18	A 040*	W	CRESOLS	T	2.60E 01	2.60E-01	6.30E 00	5
19	A 020*	P	2-CHLOROPHENOL	T	2.60E 01	2.60E-01	6.30E 00	5
20	A 060*	P	4-NITROPHENOL	T	2.60E 01	2.60E-01	6.30E 00	5
18	A 020*	P W	PHENOL	T	2.60E 01	2.60E-01	6.30E 00	5
20	A 020*	P	2-NITROPHENOL	T	2.60E 01	2.60E-01	6.30E 00	5
18	C 081*		1-INDANOL	T	2.60E 01	2.60E-01	6.30E 00	5
18	A 183*		2,6-DIMETHYL-4-HEPTYL PHENOL	T	2.60E 01	2.60E-01	6.30E 00	5
20	A 040*		3-NITROPHENOL	T	2.60E 01	2.60E-01	6.30E 00	5
18	A 182*		4,6-DI-TERT-BUTYL-M-CRESOL	T	2.60E 01	2.60E-01	6.30E 00	5
18	A 142*	P	2,4-XYLENOL	T	2.60E 01	2.60E-01	6.30E 00	5
18	A 141*		2,3-XYLENOL	T	2.60E 01	2.60E-01	6.30E 00	5
18	B 060*	W	1,4-DIHYDROXYBENZENE	T	2.60E 01	2.60E-01	6.30E 00	5
15	B 101*		O-DIETHYL BENZENE	T	2.60E 01	2.60E-01	6.30E 00	5
15	B 082*		M-XYLENE	T	3.90E 01	2.00E-01	4.71E 00	3
15	A 060*	P W	ETHYL BENZENE	T	3.90E 01	2.00E-01	4.71E 00	3
15	B 104*		O-DIISOPROPYL BENZENE	T	3.90E 01	2.00E-01	4.71E 00	3
15	A 120*	W	ISOPROPYL BENZENE	T	3.90E 01	2.00E-01	4.71E 00	3
15	A 080*	W	STYRENE	T	3.90E 01	2.00E-01	4.71E 00	3
15	B 080*	W	XYLENES	T	3.90E 01	2.00E-01	4.71E 00	3
15	B 081*		O-XYLENE	T	3.90E 01	2.00E-01	4.71E 00	3
15	B 103*		P-DIETHYL BENZENE	T	3.90E 01	2.00E-01	4.71E 00	3
15	B 102*		M-DIETHYL BENZENE	T	3.90E 01	2.00E-01	4.71E 00	3
15	B 106*		1,4-DI-TERT-BUTYL BENZENE	T	3.90E 01	2.00E-01	4.71E 00	3
15	B 100*	W	DIALKYL BENZENES (MW:134-191)	T	3.90E 01	2.00E-01	4.71E 00	3
15	B 120*	W	TETRAHYDRONAPHTHALENE	T	3.90E 01	2.00E-01	4.71E 00	3
15	B 083*		P-XYLENE	T	3.90E 01	2.00E-01	4.71E 00	3
15	A 040*	P W	TOLUENE	T	3.90E 01	2.00E-01	4.71E 00	3

GASIFIER ASH, ECOLOGY IMPACT

DMEG NO.			COMPOUND NAME	TYPE	CONC E-6 G/G	DS	WDS G/S	LCCAT
15 B 105*			M-DIISOPROPYL BENZENE	T	3.90E 01	2.00E-01	4.71E 00	3
15 A 100*		W	PROPYL BENZENE	T	3.90E 01	2.00E-01	4.71E 00	3
01 A 201			N-OCTANE	T	3.30E 02	1.70E-01	4.00E 00	1
01 A 200			OCTANES	T	3.30E 02	1.70E-01	4.00E 00	1
85 A 010			URANIUM	S	1.60E 01	1.60E-01	3.90E 00	
15 B 020*			INDAN	T	3.90E 01	1.40E-01	3.40E 00	3
17 A 040*		W	NITROTOLUENES	T	2.60E 01	1.30E-01	3.14E 00	5
17 A 085*			2,5-DINITROTOLUENE	T	2.60E 01	1.30E-01	3.14E 00	5
08 D 140*			AMYL ACETATES	T	2.60E 01	1.30E-01	3.14E 00	5
08 D 141*			N-AMYL ACETATE	T	2.60E 01	1.30E-01	3.14E 00	5
17 A 041*			2-NITROTOLUENE	T	2.60E 01	1.30E-01	3.14E 00	5
17 A 043*			4-NITROTOLUENE	T	2.60E 01	1.30E-01	3.14E 00	5
08 D 143*			ISOAMYL ACETATE	T	2.60E 01	1.30E-01	3.14E 00	5
04 A 040*		W	2-CHLORO-1,2-EPOXYPROPANE	T	2.60E 01	1.30E-01	3.14E 00	5
17 A 083*			2,3-DINITROTOLUENE	T	2.60E 01	1.30E-01	3.14E 00	5
10 A 080*		W	1,2-DIAMINOETHANE	T	2.60E 01	1.30E-01	3.14E 00	5
17 A 020*	P	W	NITROBENZENE	T	2.60E 01	1.30E-01	3.14E 00	5
17 A 086*			3,5-DINITROTOLUENE	T	2.60E 01	1.30E-01	3.14E 00	5
08 D 142*			SEC-AMYL ACETATE	T	2.60E 01	1.30E-01	3.14E 00	5
04 A 050*		W	EPICHLORHYDRIN	T	2.60E 01	1.30E-01	3.14E 00	5
10 C 020*			ANILINE	T	2.60E 01	1.30E-01	3.14E 00	5
17 A 042*			3-NITROTOLUENE	T	2.60E 01	1.30E-01	3.14E 00	5
08 D 122*			SEC-BUTYL ACETATE	T	2.60E 01	1.30E-01	3.14E 00	5
17 A 081*	P		2,6-DINITROTOLUENE	T	2.60E 01	1.30E-01	3.14E 00	5
08 D 123*			ISOBUTYL ACETATE	T	2.60E 01	1.30E-01	3.14E 00	5
17 A 084*	P		2,4-DINITROTOLUENE	T	2.60E 01	1.30E-01	3.14E 00	5
08 D 121*			N-BUTYL ACETATE	T	2.60E 01	1.30E-01	3.14E 00	5
08 D 120*			BUTYL ACETATES	T	2.60E 01	1.30E-01	3.14E 00	5
08 A 040*		W	ACETIC ACID	T	2.60E 01	1.30E-01	3.14E 00	5
04 A 060*		W	1-CHLORO-1,3-EPOXYPROPANE	T	2.60E 01	1.30E-01	3.14E 00	5
17 A 082*			3,4-DINITROTOLUENE	T	2.60E 01	1.30E-01	3.14E 00	5
17 A 080*		W	DINITROTOLUENES	T	2.60E 01	1.30E-01	3.14E 00	5
04 A 050*		W	EPICHLORHYDRIN	T	2.60E 01	1.30E-01	3.14E 00	5
04 A 040*		W	2-CHLORO-1,2-EPOXYPROPANE	T	2.00E 01	1.00E-01	2.41E 00	4
				T	2.00E 01	1.00E-01	2.41E 00	4

GASIFIER ASH, ECOLOGY IMPACT

OMEG NO.			COMPOUND NAME	TYPE	CONC E-6 G/G	DS	WDS G/S	LOCAT
17 A 080*		W	DINITROTOLUENES	T	2.00E 01	1.00E-01	2.41E 00	4
17 A 042*			3-NITROTOLUENE	T	2.00E 01	1.00E-01	2.41E 00	4
17 A 083*			2,3-DINITROTOLUENE	T	2.00E 01	1.00E-01	2.41E 00	4
17 A 020*	P	W	NITROBENZENE	T	2.00E 01	1.00E-01	2.41E 00	4
17 A 084*	P		2,4-DINITROTOLUENE	T	2.00E 01	1.00E-01	2.41E 00	4
17 A 041*			2-NITROTOLUENE	T	2.00E 01	1.00E-01	2.41E 00	4
17 A 040*		W	NITROTOLUENES	T	2.00E 01	1.00E-01	2.41E 00	4
17 A 086*			3,5-DINITROTOLUENE	T	2.00E 01	1.00E-01	2.41E 00	4
17 A 082*			3,4-DINITROTOLUENE	T	2.00E 01	1.00E-01	2.41E 00	4
17 A 081*	P		2,6-DINITROTOLUENE	T	2.00E 01	1.00E-01	2.41E 00	4
17 A 085*			2,5-DINITROTOLUENE	T	2.00E 01	1.00E-01	2.41E 00	4
04 A 060*		W	1-CHLORO-1,3-EPOXYPROPANE	T	2.00E 01	1.00E-01	2.41E 00	4
17 A 043*			4-NITROTOLUENE	T	2.00E 01	1.00E-01	2.41E 00	4
08 A 040*		W	ACETIC ACID	T	1.70E 01	8.50E-02	2.10E 00	7
15 B 083*			P-XYLENE	T	1.50E 01	7.50E-02	1.81E 00	2
15 B 105*			M-DIISOPROPYL BENZENE	T	1.50E 01	7.50E-02	1.81E 00	2
15 A 060*	P	W	ETHYL BENZENE	T	1.50E 01	7.50E-02	1.81E 00	2
15 B 103*			P-DIETHYL BENZENE	T	1.50E 01	7.50E-02	1.81E 00	2
02 B 103*			CIS-1,3-DICHLOROPROPENE	T	1.50E 01	7.50E-02	1.81E 00	2
15 B 106*			1,4-DI-TERT-BUTYL BENZENE	T	1.50E 01	7.50E-02	1.81E 00	2
02 A 340*	P		DICHLOROPROPANES	T	1.50E 01	7.50E-02	1.81E 00	2
02 B 104*			TRANS-1,3-DICHLOROPROPENE	T	1.50E 01	7.50E-02	1.81E 00	2
15 B 081*			O-XYLENE	T	1.50E 01	7.50E-02	1.81E 00	2
02 A 343*			1,3-DICHLOROPROPANE	T	1.50E 01	7.50E-02	1.81E 00	2
15 B 120*		W	TETRAHYDRONAPHTHALENE	T	1.50E 01	7.50E-02	1.81E 00	2
15 B 102*			M-DIETHYL BENZENE	T	1.50E 01	7.50E-02	1.81E 00	2
15 A 120*		W	ISOPROPYL BENZENE	T	1.50E 01	7.50E-02	1.81E 00	2
15 B 080*		W	XYLENES	T	1.50E 01	7.50E-02	1.81E 00	2
15 B 082*			M-XYLENE	T	1.50E 01	7.50E-02	1.81E 00	2
02 B 100*	P	W	DICHLOROPROPENES	T	1.50E 01	7.50E-02	1.81E 00	2
15 A 040*	P	W	TOLUENE	T	1.50E 01	7.50E-02	1.81E 00	2
15 B 104*			O-DIISOPROPYL BENZENE	T	1.50E 01	7.50E-02	1.81E 00	2
02 B 080*	P	W	TETRACHLOROETHENE	T	1.50E 01	7.50E-02	1.81E 00	2
15 B 101*			O-DIETHYL BENZENE	T	1.50E 01	7.50E-02	1.81E 00	2

GASIFIER ASH, ECOLOGY IMPACT

DMEG NO.			COMPOUND NAME	TYPE	CONC E-6 G/G	DS	WDS G/S	LCCAT
15 A 100*		W	PROPYL BENZENE	T	1.50E 01	7.50E-02	1.81E 00	2
15 B 100*		W	DIALKYL BENZENES (MW:134-191)	T	1.50E 01	7.50E-02	1.81E 00	2
15 A 080*		W	STYRENE	T	1.50E 01	7.50E-02	1.81E 00	2
08 A 080*			VALERIC ACID	T	1.00E 02	6.70E-02	1.61E 00	6
79 A 010	P		SILVER	S	6.00E-01	6.00E-02	1.50E 00	
08 A 104*			LAURIC ACID	T	1.00E 02	5.60E-02	1.34E 00	6
08 A 101*			CAPROIC ACID	T	1.00E 02	5.60E-02	1.34E 00	6
08 A 102*			CAPRYLIC ACID	T	1.00E 02	5.60E-02	1.34E 00	6
08 A 100*			SATURATED LONG CHAIN ACIDS (MW:116-201)	T	1.00E 02	5.60E-02	1.34E 00	6
08 A 103*			CAPRIC ACID	T	1.00E 02	5.60E-02	1.34E 00	6
15 B 020*			INDAN	T	1.50E 01	5.40E-02	1.30E 00	2
08 A 180*			ADIPIC ACID	T	1.00E 02	5.30E-02	1.30E 00	6
05 A 124*			3-METHYL-1-BUTANOL	T	1.00E 02	5.00E-02	1.20E 00	6
23 A 064*			4-N-PROPYLPYRIDINE	T	1.00E 02	5.00E-02	1.20E 00	6
08 D 080*			METHYL METHACRYLATE	T	1.00E 02	5.00E-02	1.20E 00	6
10 A 060*			ETHANOLAMINE	T	1.00E 02	5.00E-02	1.20E 00	6
23 A 080*		W	PHENYLPYRIDINES	T	1.00E 02	5.00E-02	1.20E 00	6
23 A 122*			2,4,6-COLLIDINE	T	1.00E 02	5.00E-02	1.20E 00	6
08 D 101*			N-PROPYL ACETATE	T	1.00E 02	5.00E-02	1.20E 00	6
06 A 020*		W	ETHYLENE GLYCOL	T	1.00E 02	5.00E-02	1.20E 00	6
08 B 060*		W	B-PROPIOLACTONE	T	1.00E 02	5.00E-02	1.20E 00	6
05 A 123*			2,2-DIMETHYL-1-PROPANOL	T	1.00E 02	5.00E-02	1.20E 00	6
05 A 122*			2-METHYL-1-BUTANOL	T	1.00E 02	5.00E-02	1.20E 00	6
23 A 063*			4-ETHYLPYRIDINE	T	1.00E 02	5.00E-02	1.20E 00	6
23 A 020*		W	PYRIDINE	T	1.00E 02	5.00E-02	1.20E 00	6
10 B 100*			MORPHOLINE	T	1.00E 02	5.00E-02	1.20E 00	6
23 A 082*			3-PHENYLPYRIDINE	T	1.00E 02	5.00E-02	1.20E 00	6
10 A 160*			CYCLOHEXYLAMINE	T	1.00E 02	5.00E-02	1.20E 00	6
23 A 083*			4-PHENYLPYRIDINE	T	1.00E 02	5.00E-02	1.20E 00	6
23 A 120*		W	COLLIDINES	T	1.00E 02	5.00E-02	1.20E 00	6
23 A 121*			5-ETHYL-2-METHYLPYRIDINE	T	1.00E 02	5.00E-02	1.20E 00	6
23 A 062*			3-ETHYLPYRIDINE	T	1.00E 02	5.00E-02	1.20E 00	6
23 A 081*			2-PHENYLPYRIDINE	T	1.00E 02	5.00E-02	1.20E 00	6
23 A 060*		W	MONOSUBSTITUTED ALKYL PYRIDINES	T	1.00E 02	5.00E-02	1.20E 00	6

GASIFIER ASH, ECOLOGY IMPACT

DMEG NO.		COMPOUND NAME	TYPE	CONC E-6 G/G	DS	WDS G/S	LCCAT
05 A 100*	W	ISOBUTYL ALCOHOL	T	1.00E 02	5.00E-02	1.20E 00	6
08 D 100*		PROPYL ACETATES	T	1.00E 02	5.00E-02	1.20E 00	6
23 A 061*		2-ETHYLPYRIDINE	T	1.00E 02	5.00E-02	1.20E 00	6
05 A 140*	W	BENZYL ALCOHOL	T	1.00E 02	5.00E-02	1.20E 00	6
05 A 120*	W	PENTANOLS (PRIMARY)	T	1.00E 02	5.00E-02	1.20E 00	6
05 A 121*		N-PENTANOL	T	1.00E 02	5.00E-02	1.20E 00	6
07 B 100*	W	CAMPHOR	T	1.00E 02	5.00E-02	1.20E 00	6
37 A 010		BORON	T	1.00E 02	4.54E-02	1.10E 00	6
83 A 010	P	MERCURY	D	2.10E 02	4.20E-02	1.01E 00	
07 B 120		ACETOPHENONE	D	1.70E 00	3.40E-02	8.22E-01	
08 A 140		OLEIC ACID	T	1.00E 02	3.22E-02	7.80E-01	6
15 B 201		1,2,3,4-TETRAMETHYLBENZENE	T	1.00E 02	2.43E-02	5.90E-01	6
15 B 203		1,2,4,5-TETRAMETHYLBENZENE	T	3.90E 01	2.00E-02	4.71E-01	3
15 B 200		TETRAMETHYLBENZENES	T	3.90E 01	2.00E-02	4.71E-01	3
15 B 202		1,2,3,5-TETRAMETHYLBENZENE	T	3.90E 01	2.00E-02	4.71E-01	3
08 A 080*		VALERIC ACID	T	3.90E 01	2.00E-02	4.71E-01	3
09 B 020*	W	BENZONITRILE	T	2.60E 01	1.73E-02	4.20E-01	5
09 B 042*		B-NAPHTHONITRILES	T	2.60E 01	1.62E-02	3.93E-01	5
09 B 041*		A-NAPHTHONITRILES	T	2.60E 01	1.62E-02	3.93E-01	5
09 B 040*	W	NAPHTHONITRILES	T	2.60E 01	1.62E-02	3.93E-01	5
08 A 103*		CAPRIC ACID	T	2.60E 01	1.62E-02	3.93E-01	5
08 A 100*		SATURATED LONG CHAIN ACIDS (MW:116-201)	T	2.60E 01	1.44E-02	3.50E-01	5
08 A 102*		CAPRYLIC ACID	T	2.60E 01	1.44E-02	3.50E-01	5
08 A 101*		CAPROIC ACID	T	2.60E 01	1.44E-02	3.50E-01	5
08 A 104*		LAURIC ACID	T	2.60E 01	1.44E-02	3.50E-01	5
08 A 180*		ADIPIC ACID	T	2.60E 01	1.44E-02	3.50E-01	5
23 A 081*		2-PHENYLPYRIDINE	T	2.60E 01	1.40E-02	3.31E-01	5
23 A 064*		4-N-PROPYLPYRIDINE	T	2.60E 01	1.30E-02	3.14E-01	5
05 A 123*		2,2-DIMETHYL-1-PROPANOL	T	2.60E 01	1.30E-02	3.14E-01	5
05 A 140*	W	BENZYL ALCOHOL	T	2.60E 01	1.30E-02	3.14E-01	5
08 D 080*		METHYL METHACRYLATE	T	2.60E 01	1.30E-02	3.14E-01	5
10 A 160*		CYCLOHEXYLAMINE	T	2.60E 01	1.30E-02	3.14E-01	5
23 A 060*	W	MONOSUBSTITUTED ALKYL PYRIDINES	T	2.60E 01	1.30E-02	3.14E-01	5
23 A 083*		4-PHENYLPYRIDINE	T	2.60E 01	1.30E-02	3.14E-01	5

GASIFIER ASH, ECOLOGY IMPACT

DMEG NO.		COMPOUND NAME	TYPE	CONC E-6 G/G	DS	WDS G/S	LCCAT
23 A 080*	W	PHENYLPYRIDINES	T	2.60E 01	1.30E-02	3.14E-01	5
08 B 060*	W	B-PROPIOLACTONE	T	2.60E 01	1.30E-02	3.14E-01	5
23 A 063*		4-ETHYLPYRIDINE	T	2.60E 01	1.30E-02	3.14E-01	5
05 A 100*	W	ISOBUTYL ALCOHOL	T	2.60E 01	1.30E-02	3.14E-01	5
17 B 060	W	1-CHLORO-4-NITROBENZENE	T	2.60E 01	1.30E-02	3.14E-01	5
17 B 040	W	1-CHLORO-2-NITROBENZENE	T	2.60E 01	1.30E-02	3.14E-01	5
23 A 120*	W	COLLIDINES	T	2.60E 01	1.30E-02	3.14E-01	5
10 B 100*		MORPHOLINE	T	2.60E 01	1.30E-02	3.14E-01	5
06 A 020*	W	ETHYLENE GLYCOL	T	2.60E 01	1.30E-02	3.14E-01	5
03 B 020		1,4-DIOXANE	T	2.60E 01	1.30E-02	3.14E-01	5
05 A 124*		3-METHYL-1-BUTANOL	T	2.60E 01	1.30E-02	3.14E-01	5
23 A 082*		3-PHENYLPYRIDINE	T	2.60E 01	1.30E-02	3.14E-01	5
08 D 100*		PROPYL ACETATES	T	2.60E 01	1.30E-02	3.14E-01	5
08 D 101*		N-PROPYL ACETATE	T	2.60E 01	1.30E-02	3.14E-01	5
05 A 120*	W	PENTANOLS (PRIMARY)	T	2.60E 01	1.30E-02	3.14E-01	5
23 A 121*		5-ETHYL-2-METHYLPYRIDINE	T	2.60E 01	1.30E-02	3.14E-01	5
10 A 060*		ETHANOLAMINE	T	2.60E 01	1.30E-02	3.14E-01	5
23 A 062*		3-ETHYLPYRIDINE	T	2.60E 01	1.30E-02	3.14E-01	5
23 A 122*		2,4,6-COLLIDINE	T	2.60E 01	1.30E-02	3.14E-01	5
05 A 122*		2-METHYL-1-BUTANOL	T	2.60E 01	1.30E-02	3.14E-01	5
04 B 040* P	W	1,1'-DICHLORODIETHYL ETHER	T	2.60E 01	1.30E-02	3.14E-01	5
04 B 080	W	2,2'-DICHLORODIETHYL ETHER	T	2.60E 01	1.30E-02	3.14E-01	5
23 A 020*	W	PYRIDINE	T	2.60E 01	1.30E-02	3.14E-01	5
05 A 121*		N-PENTANOL	T	2.60E 01	1.30E-02	3.14E-01	5
23 A 061*		2-ETHYLPYRIDINE	T	2.60E 01	1.30E-02	3.14E-01	5
09 B 042*		B-NAPHTHONITRILES	T	2.00E 01	1.30E-02	3.02E-01	4
09 B 041*		A-NAPHTHONITRILES	T	2.00E 01	1.30E-02	3.02E-01	4
09 B 040*	W	NAPHTHONITRILES	T	2.00E 01	1.30E-02	3.02E-01	4
09 B 020*	W	BENZONITRILE	T	2.60E 01	1.20E-02	2.90E-01	5
07 B 100*	W	CAMPHOR	T	1.70E 01	1.13E-02	2.74E-01	7
08 A 080*		VALERIC ACID	B	1.50E 01	1.10E-02	2.60E-01	
69 A 010		MOLYBDENUM	D	< 4.00E-01<	1.00E-02<	2.41E-01	
50 A 010	P	ANTIMONY	T	2.00E 01	1.00E-02	2.41E-01	4
04 B 040* P	W	1,1'-DICHLORODIETHYL ETHER					

GASIFIER ASH, ECOLOGY IMPACT

DMEG NO.	COMPOUND NAME	TYPE	CONC E-6 G/G	DS	WDS G/S	LCCAT
08 D 320* P	BUTYL BENZYL PHTHALATE	T	1.00E 02	5.00E-03	1.20E-01	6
08 D 320* P	BUTYL BENZYL PHTHALATE	T	2.60E 01	1.30E-03	3.14E-02	5
28 A 010	SODIUM	D	1.80E 04	0.00E-01	0.00E-01	
12 A 040* P	N-NITROSODIETHYLAMINE	T	1.00E 02	0.00E-01	0.00E-01	6
12 A 040* P	N-NITROSODIETHYLAMINE	T	2.60E 01	0.00E-01	0.00E-01	5
02 B 140* P	HEXACHLOROCYCLOPENTADIENE	T	3.30E 02	0.00E-01	0.00E-01	1
02 B 120* P	HEXACHLOROBUTADIENE	T	1.50E 01	0.00E-01	0.00E-01	2
02 B 120* P	HEXACHLOROBUTADIENE	T	3.30E 02	0.00E-01	0.00E-01	1
12 A 060* P	N-NITROSODIPROPYLAMINE	T	2.60E 01	0.00E-01	0.00E-01	5
12 A 060* P	N-NITROSODIPROPYLAMINE	T	1.00E 02	0.00E-01	0.00E-01	6
04 B 020* P	1,1'-DICHLOROMETHYL ETHER	T	2.60E 01	0.00E-01	0.00E-01	5
56 A 010	FLUORINE (AS F-)	S	1.90E 02	0.00E-01	0.00E-01	
39 A 010	GALLIUM	S	9.00E 00	0.00E-01	0.00E-01	
04 A 160* P	A-CHLOROBUTYL ETHYL ETHER	T	2.60E 01	0.00E-01	0.00E-01	5
29 A 010	POTASSIUM	D	8.60E 03	0.00E-01	0.00E-01	
04 A 180* P	CHLOROPHENYL PHENYL ETHER	T	2.60E 01	0.00E-01	0.00E-01	5
35 A 010	STRONTIUM	D	1.90E 03	0.00E-01	0.00E-01	
45 A 010	TIN	S	5.00E-01	0.00E-01	0.00E-01	
70 A 010	TUNGSTEN	S	1.00E 00	0.00E-01	0.00E-01	
12 A 020* P	N-NITROSODIMETHYLAMINE	T	2.60E 01	0.00E-01	0.00E-01	5
04 A 160* P	A-CHLOROBUTYL ETHYL ETHER	T	2.00E 01	0.00E-01	0.00E-01	4
04 A 140* P	2-CHLOROETHYL VINYL ETHER	T	2.60E 01	0.00E-01	0.00E-01	5
04 A 180* P	CHLOROPHENYL PHENYL ETHER	T	2.00E 01	0.00E-01	0.00E-01	4
43 A 010	SILICON	D	1.40E 05	0.00E-01	0.00E-01	
84 B 010	CERIUM	S	1.10E 02	0.00E-01	0.00E-01	
44 A 010	GERMANIUM	S	1.00E 00	0.00E-01	0.00E-01	
02 B 140* P	HEXACHLOROCYCLOPENTADIENE	T	1.50E 01	0.00E-01	0.00E-01	2
59 A 010	IODINE (AS I-)	S	2.00E-01	0.00E-01	0.00E-01	
84 A 010	LANTHANUM	S	1.10E 02	0.00E-01	0.00E-01	
84 F 010	DYSPROSIUM	S	7.00E 00	0.00E-01	0.00E-01	
57 A 010	CHLORINE (AS CL-)	D	1.50E 02	0.00E-01	0.00E-01	
16 A 200* P	CHLORONAPHTHALENES	T	3.90E 01	0.00E-01	0.00E-01	3
21 A 120* PH	ACENAPHTHYLENE	T	1.50E 01	0.00E-01	0.00E-01	2
04 B 020* P	1,1'-DICHLOROMETHYL ETHER	T	2.00E 01	0.00E-01	0.00E-01	4

GASIFIER ASH, ECOLOGY IMPACT

DMEG NO.	COMPOUND NAME	TYPE	CONC E-6 G/G	DS	WDS G/S	LCCAT
21 A 140* P	ANTHRACENE	T	1.50E 01	0.00E-01	0.00E-01	2
04 A 140* P	2-CHLOROETHYL VINYL ETHER	T	2.00E 01	0.00E-01	0.00E-01	4
21 A 180* P	PHENANTHRENE	T	1.50E 01	0.00E-01	0.00E-01	2
16 A 200* P	CHLORONAPHTHALENES	T	1.50E 01	0.00E-01	0.00E-01	2
63 A 010	ZIRCONIUM (AS ZR+4)	S	1.80E 02	0.00E-01	0.00E-01	
12 A 020* P	N-NITROSODIMETHYLAMINE	T	1.00E 02	0.00E-01	0.00E-01	6
21 B 120* P	CHRYSENE	T	1.50E 01	0.00E-01	0.00E-01	2
21 B 120* P	CHRYSENE	T	3.90E 01	0.00E-01	0.00E-01	3
21 B 180* P	PYRENE	T	1.50E 01	0.00E-01	0.00E-01	2
53 A 010	SULFUR	D	8.80E 03	0.00E-01	0.00E-01	
21 A 180* P	PHENANTHRENE	T	3.90E 01	0.00E-01	0.00E-01	3
21 B 040* P	BENZ(A)ANTHRACENE	T	1.50E 01	0.00E-01	0.00E-01	2
58 A 010	BROMINE	S	2.00E 00	0.00E-01	0.00E-01	
21 C 100* P	BENZO(A)PYRENE	T	3.90E 01	0.00E-01	0.00E-01	3
21 D 080* PH	BENZO(GHI)PERYLENE	T	1.50E 01	0.00E-01	0.00E-01	2
31 A 010	CESIUM	S	8.00E 00	0.00E-01	0.00E-01	
21 A 140* P	ANTHRACENE	T	3.90E 01	0.00E-01	0.00E-01	3
22 A 020* PH	FLUORENE	T	3.90E 01	0.00E-01	0.00E-01	3
22 B 040* P	FLUORANTHENE	T	1.50E 01	0.00E-01	0.00E-01	2
22 B 040* P	FLUORANTHENE	T	3.90E 01	0.00E-01	0.00E-01	3
22 C 020* P	BENZO(K)FLUORANTHENE	T	1.50E 01	0.00E-01	0.00E-01	2
22 C 020* P	BENZO(K)FLUORANTHENE	T	3.90E 01	0.00E-01	0.00E-01	3
22 C 080* P	BENZO(B)FLUORANTHENE	T	1.50E 01	0.00E-01	0.00E-01	2
64 A 010	HAFNIUM, (AS HF+4)	S	1.00E 00	0.00E-01	0.00E-01	
22 D 020* P	INDENO(1,2,3-CD)PYRENE	T	1.50E 01	0.00E-01	0.00E-01	2
22 D 020* P	INDENO(1,2,3-CD)PYRENE	T	3.90E 01	0.00E-01	0.00E-01	3
21 C 080* P	DIBENZ(A,H)ANTHRACENE	T	3.90E 01	0.00E-01	0.00E-01	3
21 A 100* PH	ACENAPHTHENE	T	1.50E 01	0.00E-01	0.00E-01	2
21 A 100* PH	ACENAPHTHENE	T	3.90E 01	0.00E-01	0.00E-01	3
84 D 010	NEODYMIUM	S	3.00E 01	0.00E-01	0.00E-01	
21 A 120* PH	ACENAPHTHYLENE	T	3.90E 01	0.00E-01	0.00E-01	3
66 A 010	NIOBIUM (AS NB+3)	S	3.10E 01	0.00E-01	0.00E-01	
84 C 010	PRASEODYMIUM	S	1.60E 01	0.00E-01	0.00E-01	
30 A 010	RUBIDIUM (AS RB+)	S	4.70E 01	0.00E-01	0.00E-01	

GASIFIER ASH, ECOLOGY IMPACT

DMEG NO.		COMPOUND NAME	TYPE	CONC E-6 G/G	DS	WDS G/S	LCCAT
84 E 010		SAMARIUM	S	1.30E 01	0.00E-01	0.00E-01	
60 A 010		SCANDIUM	S	2.00E 01	0.00E-01	0.00E-01	
21 B 040*	P	BENZ(A)ANTHRACENE	T	3.90E 01	0.00E-01	0.00E-01	3
85 B 010		THORIUM	S	2.30E 01	0.00E-01	0.00E-01	
08 D 300*	P	DI-2-ETHYLHEXYL PHTHALATE	T	2.60E 01	0.00E-01	0.00E-01	5
08 D 300*	P	DI-2-ETHYLHEXYL PHTHALATE	T	1.00E 02	0.00E-01	0.00E-01	6
21 B 180*	P	PYRENE	T	3.90E 01	0.00E-01	0.00E-01	3
21 C 080*	P	DIBENZ(A,H)ANTHRACENE	T	1.50E 01	0.00E-01	0.00E-01	2
61 A 010		YTTRIUM (AS Y+3)	S	5.90E 01	0.00E-01	0.00E-01	
21 C 100*	P	BENZO(A)PYRENE	T	1.50E 01	0.00E-01	0.00E-01	2
07 B 080*	P	ISOPHORONE	T	2.60E 01	0.00E-01	0.00E-01	5
07 B 080*	P	ISOPHORONE	T	1.00E 02	0.00E-01	0.00E-01	6
21 D 080*	PH	BENZO(GHI)PERYLENE	T	3.90E 01	0.00E-01	0.00E-01	3
22 A 020*	PH	FLUORENE	T	1.50E 01	0.00E-01	0.00E-01	2
02 A 140*	P	DIBROMOCHLOROMETHANE	T	3.30E 02	0.00E-01	0.00E-01	1
02 A 140*	P	DIBROMOCHLOROMETHANE	T	1.50E 01	0.00E-01	0.00E-01	2
02 A 160*	P	BROMOFORM	T	3.30E 02	0.00E-01	0.00E-01	1
02 A 160*	P	BROMOFORM	T	1.50E 01	0.00E-01	0.00E-01	2
02 A 320*	P	HEXACHLOROETHANE	T	3.30E 02	0.00E-01	0.00E-01	1
02 A 320*	P	HEXACHLOROETHANE	T	1.50E 01	0.00E-01	0.00E-01	2
22 C 080*	P	BENZO(B)FLUORANTHENE	T	3.90E 01	0.00E-01	0.00E-01	3

CYCLONE DUST

AVERAGE FLOW RATE = 3.8 G/S

207.15 G EXTRACTED TOTAL ORGANIC LOADING = 13 G/KG

TOTAL TCO = 0.66 G/KG TOTAL GRAV = 12.0 G/KG

3.4% ORIGINAL SAMPLE TO LC

LC TCO = 3.2 MG LC GRAV = 88.2 MG LC TOTAL = 91.4 MG

LCCAT	ORGANIC LOADING
1	2600.0
2	140.0
3	1300.0
4	1400.0
5	770.0
6	3400.0
7	1100.0

FLOW RATE = 3.80

STATE: SOLID, UNITS IN MICROGRAMS/G

IMPACT: HEALTH

EXPERIMENTALY DETERMINED DATA

SPARK SOURCE DATA

CYCLONE DUST, HEALTH IMPACT

DMEG NO.			COMPOUND NAME	TYPE	CONC E-6 G/G	DS	WDS G/S	LCCAT
16 A 220*		W	POLYCHLORINATED BIPHENYLS	T	1.30E 03	1.30E 06	4.94E 06	3
16 A 220*		W	POLYCHLORINATED BIPHENYLS	T	1.40E 02	1.40E 05	5.32E 05	2
21 C 100*	P	W	BENZO(A)PYRENE	T	1.30E 03	2.20E 04	8.23E 04	3
21 C 080*	P		DIBENZ(A,H)ANTHRACENE	T	1.30E 03	4.64E 03	1.80E 04	3
19 A 020*	P	W	2-CHLOROPHENOL	T	3.40E 03	3.40E 03	1.30E 04	6
19 A 040*	P	W	2,4-DICHLOROPHENOL	T	3.40E 03	3.40E 03	1.30E 04	6
20 B 041*			3,5-DINITRO-P-CRESOL	T	3.40E 03	3.40E 03	1.30E 04	6
19 A 060*	P	W	PENTACHLOROPHENOL	T	3.40E 03	3.40E 03	1.30E 04	6
18 A 042*			O-CRESOL	T	3.40E 03	3.40E 03	1.30E 04	6
19 B 020*		W	CHLORINATED CRESOLS	T	3.40E 03	3.40E 03	1.30E 04	6
18 C 083*			5-INDANOL	T	3.40E 03	3.40E 03	1.30E 04	6
18 A 020*	P	W	PHENOL	T	3.40E 03	3.40E 03	1.30E 04	6
18 A 060*		W	2-METHOXYPHENOL	T	3.40E 03	3.40E 03	1.30E 04	6
18 A 040*		W	CRESOLS	T	3.40E 03	3.40E 03	1.30E 04	6
18 A 080*		W	ETHYLPHENOLS	T	3.40E 03	3.40E 03	1.30E 04	6
18 A 041*			M-CRESOL	T	3.40E 03	3.40E 03	1.30E 04	6
18 A 081*			O-ETHYLPHENOL	T	3.40E 03	3.40E 03	1.30E 04	6
20 A 020*	P	W	2-NITROPHENOL	T	3.40E 03	3.40E 03	1.30E 04	6
18 A 082*			M-ETHYLPHENOL	T	3.40E 03	3.40E 03	1.30E 04	6
20 A 040*		W	3-NITROPHENOL	T	3.40E 03	3.40E 03	1.30E 04	6
18 A 083*			P-ETHYLPHENOL	T	3.40E 03	3.40E 03	1.30E 04	6
20 A 060*	P	W	4-NITROPHENOL	T	3.40E 03	3.40E 03	1.30E 04	6
18 A 100*		W	PHENYLPHENOLS	T	3.40E 03	3.40E 03	1.30E 04	6
20 A 080*		W	2-AMINO-4,6-DINITROPHENOL	T	3.40E 03	3.40E 03	1.30E 04	6
18 A 101*			O-PHENYLPHENOL	T	3.40E 03	3.40E 03	1.30E 04	6
20 A 100*		W	DINITROPHENOLS	T	3.40E 03	3.40E 03	1.30E 04	6
18 A 102*			P-PHENYLPHENOL	T	3.40E 03	3.40E 03	1.30E 04	6
20 A 101*	P		2,4-DINITROPHENOL	T	3.40E 03	3.40E 03	1.30E 04	6
18 A 103*			M-PHENYLPHENOL	T	3.40E 03	3.40E 03	1.30E 04	6
20 A 102*			2,5-DINITROPHENOL	T	3.40E 03	3.40E 03	1.30E 04	6
18 A 120*		W	2,2'-DIHYDROXYDIPHENYL	T	3.40E 03	3.40E 03	1.30E 04	6
20 A 103*			2,6-DINITROPHENOL	T	3.40E 03	3.40E 03	1.30E 04	6
18 A 140*		W	XYLENOLS	T	3.40E 03	3.40E 03	1.30E 04	6
20 A 120*		W	2,4,6-TRINITROPHENOL	T	3.40E 03	3.40E 03	1.30E 04	6

CYCLONE DUST, HEALTH IMPACT

DMEG NO.		COMPOUND NAME	TYPE	CONC E-6 G/G	DS	WDS G/S	LCCAT
18 A 141*		2,3-XYLENOL	T	5.40E 03	3.40E 03	1.30E 04	6
20 B 020*	P W	4,6-DINITRO-O-CRESOL	T	5.40E 03	3.40E 03	1.30E 04	6
18 A 142*	P	2,4-XYLENOL	T	3.40E 03	3.40E 03	1.30E 04	6
20 B 040*	W	DINITRO-P-CRESOLS	T	3.40E 03	3.40E 03	1.30E 04	6
18 A 143*		2,5-XYLENOL	T	3.40E 03	3.40E 03	1.30E 04	6
18 C 082*		4-INDANOL	T	3.40E 03	3.40E 03	1.30E 04	6
18 A 144*		2,6-XYLENOL	T	3.40E 03	3.40E 03	1.30E 04	6
20 B 042*		2,6-DINITRO-P-CRESOL	T	3.40E 03	3.40E 03	1.30E 04	6
18 A 145*		3,5-XYLENOL	T	3.40E 03	3.40E 03	1.30E 04	6
18 B 020*	W	CATECHOL	T	3.40E 03	3.40E 03	1.30E 04	6
18 A 146*		3,4-XYLENOL	T	3.40E 03	3.40E 03	1.30E 04	6
18 B 040*	W	1,3-DIHYDROXYBENZENE	T	3.40E 03	3.40E 03	1.30E 04	6
18 A 160*	W	ETHYL CRESOLS	T	3.40E 03	3.40E 03	1.30E 04	6
18 B 060*	W	1,4-DIHYDROXYBENZENE	T	3.40E 03	3.40E 03	1.30E 04	6
18 A 161*		6-ETHYL-M-CRESOL	T	3.40E 03	3.40E 03	1.30E 04	6
18 A 043*		P-CRESOL	T	3.40E 03	3.40E 03	1.30E 04	6
19 B 021*		CHLORINATED-O-CRESOLS	T	3.40E 03	3.40E 03	1.30E 04	6
18 A 162*		4-ETHYL-O-CRESOL	T	3.40E 03	3.40E 03	1.30E 04	6
18 A 163*		2-ETHYL-P-CRESOL	T	3.40E 03	3.40E 03	1.30E 04	6
19 B 022*	P	CHLORINATED-M-CRESOLS	T	3.40E 03	3.40E 03	1.30E 04	6
18 A 180*	W	POLYALKYLPHENOLS (MW>135)	T	3.40E 03	3.40E 03	1.30E 04	6
19 B 023*		CHLORINATED-P-CRESOLS	T	3.40E 03	3.40E 03	1.30E 04	6
18 A 181*		2,4,6-TRIMETHYL METHYL PHENOL	T	3.40E 03	3.40E 03	1.30E 04	6
18 C 081*		1-INDANOL	T	3.40E 03	3.40E 03	1.30E 04	6
18 A 182*		4,6-DI-TERT-BUTYL-M-CRESOL	T	3.40E 03	3.40E 03	1.30E 04	6
18 B 080*	W	1,2,3-TRIHYDROXYBENZENE	T	3.40E 03	3.40E 03	1.30E 04	6
18 A 183*		2,6-DIMETHYL-4-HEPTYL PHENOL	T	3.40E 03	3.40E 03	1.30E 04	6
18 C 020*	W	1-NAPHTHOL	T	3.40E 03	3.40E 03	1.30E 04	6
18 C 040*	W	2-NAPHTHOL	T	3.40E 03	3.40E 03	1.30E 04	6
18 C 080*	W	INDANOLS	T	3.40E 03	3.40E 03	1.30E 04	6
72 A 010		IRON (AS FE+2)	D	9.20E 03	3.10E 03	1.20E 04	
21 C 100*	P W	BENZO(A)PYRENE	T	1.40E 02	2.33E 03	8.90E 03	2
18 A 160*	W	ETHYL CRESOLS	T	7.70E 02	7.70E 02	2.92E 03	5
18 A 146*		3,4-XYLENOL	T	7.70E 02	7.70E 02	2.92E 03	5

CYCLONE DUST, HEALTH IMPACT

DMEG NO.			COMPOUND NAME	TYPE	CONC E-6 G/G	DS	WDS G/S	LCCAT
18 A 183*			2,6-DIMETHYL-4-HEPTYL PHENOL	T	7.70E 02	7.70E 02	2.92E 03	5
18 C 020*		W	1-NAPHTHOL	T	7.70E 02	7.70E 02	2.92E 03	5
18 B 020*		W	CATECHOL	T	7.70E 02	7.70E 02	2.92E 03	5
18 C 040*		W	2-NAPHTHOL	T	7.70E 02	7.70E 02	2.92E 03	5
18 B 040*		W	1,3-DIHYDROXYBENZENE	T	7.70E 02	7.70E 02	2.92E 03	5
18 C 080*		W	INDANOLS	T	7.70E 02	7.70E 02	2.92E 03	5
18 B 060*		W	1,4-DIHYDROXYBENZENE	T	7.70E 02	7.70E 02	2.92E 03	5
18 C 081*			1-INDANOL	T	7.70E 02	7.70E 02	2.92E 03	5
18 B 080*		W	1,2,3-TRIHYDROXYBENZENE	T	7.70E 02	7.70E 02	2.92E 03	5
18 C 082*			4-INDANOL	T	7.70E 02	7.70E 02	2.92E 03	5
18 C 083*			5-INDANOL	T	7.70E 02	7.70E 02	2.92E 03	5
18 A 144*			2,6-XYLENOL	T	7.70E 02	7.70E 02	2.92E 03	5
18 A 020*	P	W	PHENOL	T	7.70E 02	7.70E 02	2.92E 03	5
19 A 020*	P	W	2-CHLOROPHENOL	T	7.70E 02	7.70E 02	2.92E 03	5
18 A 040*		W	CRESOLS	T	7.70E 02	7.70E 02	2.92E 03	5
19 A 040*	P	W	2,4-DICHLOROPHENOL	T	7.70E 02	7.70E 02	2.92E 03	5
18 A 041*			M-CRESOL	T	7.70E 02	7.70E 02	2.92E 03	5
19 A 060*	P	W	PENTACHLOROPHENOL	T	7.70E 02	7.70E 02	2.92E 03	5
18 A 161*			6-ETHYL-M-CRESOL	T	7.70E 02	7.70E 02	2.92E 03	5
19 B 020*		W	CHLORINATED CRESOLS	T	7.70E 02	7.70E 02	2.92E 03	5
18 A 043*			P-CRESOL	T	7.70E 02	7.70E 02	2.92E 03	5
19 B 021*			CHLORINATED-O-CRESOLS	T	7.70E 02	7.70E 02	2.92E 03	5
18 A 163*			2-ETHYL-P-CRESOL	T	7.70E 02	7.70E 02	2.92E 03	5
19 B 022*	P		CHLORINATED-M-CRESOLS	T	7.70E 02	7.70E 02	2.92E 03	5
18 A 180*		W	POLYALKYLPHENOLS (MW>135)	T	7.70E 02	7.70E 02	2.92E 03	5
19 B 023*			CHLORINATED-P-CRESOLS	T	7.70E 02	7.70E 02	2.92E 03	5
18 A 181*			2,4,6-TRIMETHYL METHYL PHENOL	T	7.70E 02	7.70E 02	2.92E 03	5
18 A 182*			4,6-DI-TERT-BUTYL-M-CRESOL	T	7.70E 02	7.70E 02	2.92E 03	5
18 A 082*			M-ETHYLPHENOL	T	7.70E 02	7.70E 02	2.92E 03	5
20 A 040*		W	3-NITROPHENOL	T	7.70E 02	7.70E 02	2.92E 03	5
18 A 083*			P-ETHYLPHENOL	T	7.70E 02	7.70E 02	2.92E 03	5
20 A 060*	P	W	4-NITROPHENOL	T	7.70E 02	7.70E 02	2.92E 03	5
18 A 100*		W	PHENYLPHENOLS	T	7.70E 02	7.70E 02	2.92E 03	5
20 A 080*		W	2-AMINO-4,6-DINITROPHENOL	T	7.70E 02	7.70E 02	2.92E 03	5

CYCLONE DUST, HEALTH IMPACT

DMEG NO.				COMPOUND NAME	TYPE	CONC E-6 G/G	DS	WDS G/S	LCCAT
18 A 101*				O-PHENYLPHENOL	T	7.70E 02	7.70E 02	2.92E 03	5
20 A 100*		W		DINITROPHENOLS	T	7.70E 02	7.70E 02	2.92E 03	5
18 A 102*				P-PHENYLPHENOL	T	7.70E 02	7.70E 02	2.92E 03	5
20 A 101*	P			2,4-DINITROPHENOL	T	7.70E 02	7.70E 02	2.92E 03	5
18 A 103*				M-PHENYLPHENOL	T	7.70E 02	7.70E 02	2.92E 03	5
20 A 102*				2,5-DINITROPHENOL	T	7.70E 02	7.70E 02	2.92E 03	5
18 A 120*		W		2,2'-DIHYDROXYDIPHENYL	T	7.70E 02	7.70E 02	2.92E 03	5
20 A 103*				2,6-DINITROPHENOL	T	7.70E 02	7.70E 02	2.92E 03	5
18 A 140*		W		XYLENOLS	T	7.70E 02	7.70E 02	2.92E 03	5
20 A 120*		W		2,4,6-TRINITROPHENOL	T	7.70E 02	7.70E 02	2.92E 03	5
18 A 141*				2,3-XYLENOL	T	7.70E 02	7.70E 02	2.92E 03	5
20 B 020*	P	W		4,6-DINITRO-O-CRESOL	T	7.70E 02	7.70E 02	2.92E 03	5
18 A 142*	P			2,4-XYLENOL	T	7.70E 02	7.70E 02	2.92E 03	5
20 B 040*		W		DINITRO-P-CRESOLS	T	7.70E 02	7.70E 02	2.92E 03	5
18 A 143*				2,5-XYLENOL	T	7.70E 02	7.70E 02	2.92E 03	5
20 B 041*				3,5-DINITRO-P-CRESOL	T	7.70E 02	7.70E 02	2.92E 03	5
18 A 081*				O-ETHYLPHENOL	T	7.70E 02	7.70E 02	2.92E 03	5
20 B 042*				2,6-DINITRO-P-CRESOL	T	7.70E 02	7.70E 02	2.92E 03	5
18 A 145*				3,5-XYLENOL	T	7.70E 02	7.70E 02	2.92E 03	5
18 A 042*				O-CRESOL	T	7.70E 02	7.70E 02	2.92E 03	5
18 A 080*		W		ETHYLPHENOLS	T	7.70E 02	7.70E 02	2.92E 03	5
20 A 020*	P	W		2-NITROPHENOL	T	7.70E 02	7.70E 02	2.92E 03	5
18 A 162*				4-ETHYL-O-CRESOL	T	7.70E 02	7.70E 02	2.92E 03	5
18 A 060*		W		2-METHOXYPHENOL	T	7.70E 02	7.70E 02	2.92E 03	5
02 A 380*		W		HEXACHLOROCYCLOHEXANE	T	2.60E 03	6.50E 02	2.50E 03	1
21 C 080*	P			DIBENZ(A,H)ANTHRACENE	T	1.40E 02	5.00E 02	1.90E 03	2
54 A 010	P			SELENIUM	D	1.40E 01	1.40E 02	5.31E 02	
36 A 010				BARIUM	D	1.30E 03	1.30E 02	4.94E 02	
49 A 010	P			ARSENIC	D	6.30E 01	1.30E 02	4.80E 02	
21 B 080*				3-METHYLCHOLANTHRENE	T	1.30E 03	1.20E 02	4.50E 02	3
83 A 010	P			MERCURY	D	< 2.30E 00<	1.20E 02<	4.40E 02	
04 B 020*	P	W		1,1'-DICHLOROMETHYL ETHER	T	1.40E 03	9.33E 01	3.54E 02	4
38 A 010				ALUMINUM	D	1.20E 04	7.50E 01	2.90E 02	
34 A 010				CALCIUM (AS CA+2)	D	2.90E 04	6.04E 01	2.30E 02	

CYCLONE DUST, HEALTH IMPACT

DMEG NO.				COMPOUND NAME	TYPE	CONC E-6 G/G	DS	WDS G/S	LCCAT
43	A 010			SILICON	D	1.80E 04	6.00E 01	2.30E 02	
04	B 020*	P	W	1,1'-DICHLOROMETHYL ETHER	T	7.70E 02	5.13E 01	2.00E 02	5
33	A 010			MAGNESIUM	D	7.80E 03	4.33E 01	1.64E 02	
71	A 010	P		MANGANESE	D	1.90E 01	3.80E 01	1.44E 02	
02	A 380*		W	HEXACHLOROCYCLOHEXANE	T	1.40E 02	3.50E 01	1.33E 02	2
68	A 010	P		CHROMIUM	S	1.10E 01	2.20E 01	8.40E 01	
82	A 010	P		CADMIUM	S	2.00E 00	2.00E 01	7.60E 01	
48	A 010			PHOSPHORUS	D	5.90E 02	2.00E 01	7.50E 01	
46	A 010	P		LEAD	S	8.00E 00	1.60E 01	6.10E 01	
35	A 010			STRONTIUM	D	1.40E 03	1.52E 01	5.80E 01	
21	B 080*			3-METHYLCHOLANTHRENE	T	1.40E 02	1.50E 01	4.83E 01	2
10	C 100*			1,4-DIAMINOBENZENE	T	3.40E 03	1.13E 01	4.30E 01	6
10	C 041*			2-AMINOTOLUENE	T	3.40E 03	1.03E 01	3.91E 01	6
10	C 043*			4-AMINOTOLUENE	T	3.40E 03	1.03E 01	3.91E 01	6
10	C 042*			3-AMINOTOLUENE	T	3.40E 03	1.03E 01	3.91E 01	6
10	C 040*			AMINOTOLUENES	T	3.40E 03	1.03E 01	3.91E 01	6
21	B 040*	P		BENZ(A)ANTHRACENE	T	1.30E 03	1.00E 01	3.80E 01	3
21	D 040*		W	DIBENZO(A,I)PYRENE	T	1.30E 03	1.00E 01	3.80E 01	3
12	A 040*	P		N-NITROSODIETHYLAMINE	T	3.40E 03	9.44E 00	3.60E 01	6
76	A 010	P		NICKEL	S	4.00E 00	8.90E 00	3.40E 01	
02	A 320*	P		HEXACHLOROETHANE	T	2.60E 03	8.70E 00	3.30E 01	1
27	A 010			LITHIUM	S	6.00E 00	8.60E 00	3.30E 01	
02	B 140*	P	W	HEXACHLOROCYCLOPENTADIENE	T	2.60E 03	7.90E 00	3.00E 01	1
23	B 100*		W	DIHYDROACRIDINE	T	3.40E 03	6.93E 00	2.63E 01	6
28	A 010			SODIUM	D	1.10E 04	6.90E 00	2.61E 01	
10	C 220*			2-AMINONAPHTHALENE	T	3.40E 03	6.80E 00	2.60E 01	6
32	A 010	P		BERYLLIUM	S	4.00E-01	6.70E 00	2.53E 01	
23	B 240*			DIBENZ(A,H)ACRIDINE	T	3.40E 03	5.10E 00	1.92E 01	6
23	C 160*		W	DIBENZO(C,G)CARBAZOLE	T	1.40E 03	4.70E 00	1.80E 01	4
23	B 220*			DIBENZ(A,J)ACRIDINE	T	3.40E 03	4.60E 00	1.74E 01	6
79	A 010	P		SILVER	S	2.00E 00	4.00E 00	1.52E 01	
65	A 010			VANADIUM	S	1.90E 01	3.80E 00	1.44E 01	
56	A 010			FLUORINE (AS F-)	S	2.80E 02	3.73E 00	1.41E 01	
08	B 060*		W	B-PROPIOLACTONE	T	3.40E 03	3.60E 00	1.40E 01	6

CYCLONE DUST, HEALTH IMPACT

DMEG NO.			COMPOUND NAME	TYPE	CONC E-6 G/G	DS	WDS G/S	LCCAT
74 A 010			COBALT	S	5.00E 00	3.33E 00	1.30E 01	
81 A 010	P		ZINC	S	1.60E 02	3.20E 00	1.21E 01	
78 A 010	P		COPPER	S	3.00E 01	3.00E 00	1.14E 01	
23 C 160*		W	DIBENZO(C,G)CARBAZOLE	T	7.70E 02	2.60E 00	9.80E 00	5
10 C 100*			1,4-DIAMINOBENZENE	T	7.70E 02	2.60E 00	9.80E 00	5
10 C 043*			4-AMINOTOLUENE	T	7.70E 02	2.33E 00	8.90E 00	5
10 C 041*			2-AMINOTOLUENE	T	7.70E 02	2.33E 00	8.90E 00	5
10 C 042*			3-AMINOTOLUENE	T	7.70E 02	2.33E 00	8.90E 00	5
10 C 040*			AMINOTOLUENES	T	7.70E 02	2.33E 00	8.90E 00	5
10 C 082*			M-ANISIDINE	T	3.40E 03	2.30E 00	8.61E 00	6
13 A 100*		W	BENZENETHIOL	T	3.40E 03	2.30E 00	8.61E 00	6
10 C 083*			P-ANISIDINE	T	3.40E 03	2.30E 00	8.61E 00	6
10 C 081*			O-ANISIDINE	T	3.40E 03	2.30E 00	8.61E 00	6
10 C 080*			ANISIDINES	T	3.40E 03	2.30E 00	8.61E 00	6
62 A 010			TITANIUM	D	4.00E 02	2.22E 00	8.44E 00	
12 A 040*	P		N-NITROSODIETHYLAMINE	T	7.70E 02	2.13E 00	8.12E 00	5
10 C 200*			1-AMINONAPHTHALENE	T	3.40E 03	2.00E 00	7.60E 00	6
21 B 103*			2-METHYL BENZO(C)PHENANTHRENE	T	1.30E 03	1.94E 00	7.40E 00	3
21 B 102*			1-METHYL BENZO(C)PHENANTHRENE	T	1.30E 03	1.94E 00	7.40E 00	3
21 B 106*			7-METHYL BENZO(C)PHENANTHRENE	T	1.30E 03	1.94E 00	7.40E 00	3
21 B 10A*			N-PROPYL BENZO(C)PHENANTHRENE	T	1.30E 03	1.94E 00	7.40E 00	3
21 B 104*			5-METHYL BENZO(C)PHENANTHRENE	T	1.30E 03	1.94E 00	7.40E 00	3
21 B 107*			8-METHYL BENZO(C)PHENANTHRENE	T	1.30E 03	1.94E 00	7.40E 00	3
21 B 108*			ISOPROPYL BENZO(C)PHENANTHRENE	T	1.30E 03	1.94E 00	7.40E 00	3
21 B 105*			6-METHYL BENZO(C)PHENANTHRENE	T	1.30E 03	1.94E 00	7.40E 00	3
21 B 101*			BENZO(C)PHENANTHRENE	T	1.30E 03	1.94E 00	7.40E 00	3
21 B 100*			BENZO(C)PHENANTHRENE & ALKYL DERIVATIVES	T	1.30E 03	1.94E 00	7.40E 00	3
21 B 109*			6-ETHYL BENZO(C)PHENANTHRENE	T	1.30E 03	1.94E 00	7.40E 00	3
21 B 108*			2-ETHYL BENZO(C)PHENANTHRENE	T	1.30E 03	1.94E 00	7.40E 00	3
63 A 010			ZIRCONIUM (AS ZR+4)	S	2.90E 01	1.93E 00	7.34E 00	
12 A 020*	P	W	N-NITROSODIMETHYLAMINE	T	3.40E 03	1.70E 00	6.50E 00	6
10 C 140*	P		BENZIDINE	T	3.40E 03	1.70E 00	6.50E 00	6
23 B 100*		W	DIHYDROACRIDINE	T	7.70E 02	1.60E 00	6.00E 00	5
10 C 220*			2-AMINONAPHTHALENE	T	7.70E 02	1.54E 00	5.90E 00	5

CYCLONE DUST, HEALTH IMPACT

OMEG NO.				COMPOUND NAME	TYPE	CONC E-6 G/G	DS	WDS G/S	LCCAT
85 B 010				THORIUM	S	2.00E 00	1.53E 00	5.84E 00	
37 A 010				BORON	D	1.10E 02	1.20E 00	4.50E 00	
08 B 060*		W		B-PROPIOLACTONE	T	1.10E 03	1.20E 00	4.40E 00	7
23 B 240*				DIBENZ(A,H)ACRIDINE	T	7.70E 02	1.14E 00	4.40E 00	5
08 C 060*		W		6-HEXANELACTAM	T	3.40E 03	1.13E 00	4.30E 00	6
08 A 123*				STEARIC ACID	T	3.40E 03	1.10E 00	4.20E 00	6
08 A 120*		W		SATURATED LONG CHAIN ACIDS (MW:228-285)	T	3.40E 03	1.10E 00	4.20E 00	6
08 A 122*				PALMITIC ACID	T	3.40E 03	1.10E 00	4.20E 00	6
08 A 121*				MYRISTIC ACID	T	3.40E 03	1.10E 00	4.20E 00	6
21 B 040*	P			BENZ(A)ANTHRACENE	T	1.40E 02	1.10E 00	4.10E 00	2
21 D 040*		W		DIBENZO(A,I)PYRENE	T	1.40E 02	1.10E 00	4.10E 00	2
23 B 220*				DIBENZ(A,J)ACRIDINE	T	7.70E 02	1.04E 00	4.00E 00	5
12 B 020*		W		N-METHYL-N-NITROSOANILINE	T	3.40E 03	8.71E-01	3.31E 00	6
10 C 120*				4-AMINOBIPHENYL	T	3.40E 03	8.50E-01	3.23E 00	6
08 B 060*		W		B-PROPIOLACTONE	T	7.70E 02	8.10E-01	3.10E 00	5
02 A 180*				DIBROMODICHLOROMETHANE	T	2.60E 03	6.20E-01	2.40E 00	1
10 C 080*				ANISIDINES	T	7.70E 02	5.13E-01	2.00E 00	5
10 C 083*				P-ANISIDINE	T	7.70E 02	5.13E-01	2.00E 00	5
13 A 100*		W		BENZENETHIOL	T	7.70E 02	5.13E-01	2.00E 00	5
10 C 082*				M-ANISIDINE	T	7.70E 02	5.13E-01	2.00E 00	5
10 C 081*				O-ANISIDINE	T	7.70E 02	5.13E-01	2.00E 00	5
22 C 080*	P	W		BENZO(B)FLUORANTHENE	T	1.30E 03	4.81E-01	1.82E 00	3
17 B 060*		W		1-CHLORO-4-NITROBENZENE	T	1.40E 03	4.70E-01	1.80E 00	4
17 B 040*		W		1-CHLORO-2-NITROBENZENE	T	1.40E 03	4.70E-01	1.80E 00	4
02 A 320*	P			HEXACHLOROETHANE	T	1.40E 02	4.70E-01	1.80E 00	2
14 B 020		W		DIMETHYL SULFOXIDE	T	1.10E 03	4.60E-01	1.74E 00	7
10 C 200*				1-AMINONAPHTHALENE	T	7.70E 02	4.52E-01	1.72E 00	5
15 A 160*		W		BIPHENYL	T	1.30E 03	4.33E-01	1.64E 00	3
61 A 010				YTTRIUM (AS Y+3)	S	1.30E 01	4.33E-01	1.64E 00	
02 B 140*	P	W		HEXACHLOROCYCLOPENTADIENE	T	1.40E 02	4.24E-01	1.61E 00	2
21 D 060*				DIBENZO(A,L)PYRENE	T	1.30E 03	4.10E-01	1.54E 00	3
10 C 140*	P			BENZIDINE	T	7.70E 02	3.90E-01	1.50E 00	5
12 A 020*	P	W		N-NITROSODIMETHYLAMINE	T	7.70E 02	3.90E-01	1.50E 00	5
08 A 123*				STEARIC ACID	T	1.10E 03	3.54E-01	1.34E 00	7

CYCLONE DUST, HEALTH IMPACT

DMEG NO.			COMPOUND NAME	TYPE	CONC E-6 G/G	DS	WDS G/S	LCCAT
08 A 121*			MYRISTIC ACID	T	1.10E 03	3.54E-01	1.34E 00	7
08 A 120*		W	SATURATED LONG CHAIN ACIDS (MW:228-285)	T	1.10E 03	3.54E-01	1.34E 00	7
08 A 122*			PALMITIC ACID	T	1.10E 03	3.54E-01	1.34E 00	7
44 A 010			GERMANIUM	S	6.00E 00	3.52E-01	1.34E 00	
17 A 060*		W	4-NITROBIPHENYL	T	1.40E 03	3.50E-01	1.33E 00	4
08 A 140*			OLEIC ACID	T	3.40E 03	3.40E-01	1.30E 00	6
17 A 085*			2,5-DINITROTOLUENE	T	1.40E 03	3.11E-01	1.20E 00	4
17 A 083*			2,3-DINITROTOLUENE	T	1.40E 03	3.11E-01	1.20E 00	4
17 A 084*	P		2,4-DINITROTOLUENE	T	1.40E 03	3.11E-01	1.20E 00	4
17 A 086*			3,5-DINITROTOLUENE	T	1.40E 03	3.11E-01	1.20E 00	4
17 A 082*			3,4-DINITROTOLUENE	T	1.40E 03	3.11E-01	1.20E 00	4
17 A 081*	P		2,6-DINITROTOLUENE	T	1.40E 03	3.11E-01	1.20E 00	4
17 A 080*			DINITROTOLUENES	T	1.40E 03	3.11E-01	1.20E 00	4
41 A 010	P		THALLIUM	S	9.00E-01	3.00E-01	1.13E 00	
22 D 020*	P	W	INDENO(1,2,3-CD)PYRENE	T	1.30E 03	2.70E-01	1.02E 00	3
21 A 180*	P	W	PHENANTHRENE	T	1.30E 03	2.70E-01	1.02E 00	3
22 C 020*	P		BENZO(K)FLUORANTHENE	T	1.30E 03	2.70E-01	1.00E 00	3
23 D 020*		W	BENZOTHIAZOLE	T	3.40E 03	2.61E-01	9.93E-01	6
17 B 040*		W	1-CHLORO-2-NITROBENZENE	T	7.70E 02	2.60E-01	9.80E-01	5
08 C 060*		W	6-HEXANELACTAM	T	7.70E 02	2.60E-01	9.80E-01	5
17 B 060*		W	1-CHLORO-4-NITROBENZENE	T	7.70E 02	2.60E-01	9.80E-01	5
08 A 123*			STEARIC ACID	T	7.70E 02	2.50E-01	9.43E-01	5
08 A 120*		W	SATURATED LONG CHAIN ACIDS (MW:228-285)	T	7.70E 02	2.50E-01	9.43E-01	5
08 A 121*			MYRISTIC ACID	T	7.70E 02	2.50E-01	9.43E-01	5
08 A 122*			PALMITIC ACID	T	7.70E 02	2.50E-01	9.43E-01	5
23 D 040*			METHYL BENZOTHIAZOLE	T	3.40E 03	2.42E-01	9.22E-01	6
21 B 142*			5-METHYL CHRYSENE	T	1.30E 03	2.40E-01	9.14E-01	3
21 B 141*			4-METHYL CHRYSENE	T	1.30E 03	2.40E-01	9.14E-01	3
21 B 140*			METHYL CHRYSENES	T	1.30E 03	2.40E-01	9.14E-01	3
04 A 050*		W	EPICHLORHYDRIN	T	1.40E 03	2.33E-01	8.90E-01	4
04 A 060*		W	1-CHLORO-1,3-EPOXYPROPANE	T	1.40E 03	2.33E-01	8.90E-01	4
04 A 040*		W	2-CHLORO-1,2-EPOXYPROPANE	T	1.40E 03	2.33E-01	8.90E-01	4
08 D 283*			DI-N-BUTYL PHTHALATE	T	3.40E 03	2.30E-01	8.61E-01	6
08 D 281*			DIMETHYL PHTHALATE	T	3.40E 03	2.30E-01	8.61E-01	6

CYCLONE DUST, HEALTH IMPACT

DMEG NO.			COMPOUND NAME	TYPE	CONC E-6 G/G	DS	WDS G/S	LCCAT
08 D 300*	P		DI-2-ETHYLHEXYL PHTHALATE	T	3.40E 03	2.30E-01	8.61E-01	6
08 D 282*			DIETHYL PHTHALATE	T	3.40E 03	2.30E-01	8.61E-01	6
08 D 280*	P	W	PHTHALATE ESTERS (MW:194-279)	T	3.40E 03	2.30E-01	8.61E-01	6
39 A 010			GALLIUM	S	3.30E 01	2.20E-01	8.40E-01	
02 B 120*	P		HEXACHLOROBUTADIENE	T	2.60E 03	2.20E-01	8.23E-01	1
15 B 060*		W	4,4'-DIPHENYLBIPHENYL	T	1.30E 03	2.20E-01	8.23E-01	3
21 B 108*			2-ETHYL BENZO(C)PHENANTHRENE	T	1.40E 02	2.10E-01	7.94E-01	2
21 B 103*			2-METHYL BENZO(C)PHENANTHRENE	T	1.40E 02	2.10E-01	7.94E-01	2
21 B 107*			8-METHYL BENZO(C)PHENANTHRENE	T	1.40E 02	2.10E-01	7.94E-01	2
21 B 104*			5-METHYL BENZO(C)PHENANTHRENE	T	1.40E 02	2.10E-01	7.94E-01	2
21 B 106*			7-METHYL BENZO(C)PHENANTHRENE	T	1.40E 02	2.10E-01	7.94E-01	2
21 B 100*			BENZO(C)PHENANTHRENE & ALKYL DERIVATIVES	T	1.40E 02	2.10E-01	7.94E-01	2
21 B 109*			6-ETHYL BENZO(C)PHENANTHRENE	T	1.40E 02	2.10E-01	7.94E-01	2
21 B 101*			BENZO(C)PHENANTHRENE	T	1.40E 02	2.10E-01	7.94E-01	2
21 B 108*			ISOPROPYL BENZO(C)PHENANTHRENE	T	1.40E 02	2.10E-01	7.94E-01	2
21 B 10A*			N-PROPYL BENZO(C)PHENANTHRENE	T	1.40E 02	2.10E-01	7.94E-01	2
21 B 105*			6-METHYL BENZO(C)PHENANTHRENE	T	1.40E 02	2.10E-01	7.94E-01	2
21 B 102*			1-METHYL BENZO(C)PHENANTHRENE	T	1.40E 02	2.10E-01	7.94E-01	2
08 A 102*			CAPRYLIC ACID	T	3.40E 03	2.00E-01	7.60E-01	6
08 A 103*			CAPRIC ACID	T	3.40E 03	2.00E-01	7.60E-01	6
08 A 101*			CAPROIC ACID	T	3.40E 03	2.00E-01	7.60E-01	6
08 A 100*			SATURATED LONG CHAIN ACIDS (MW:116-201)	T	3.40E 03	2.00E-01	7.60E-01	6
08 A 104*			LAURIC ACID	T	3.40E 03	2.00E-01	7.60E-01	6
12 B 020*		W	N-METHYL-N-NITROSOANILINE	T	7.70E 02	2.00E-01	7.50E-01	5
21 B 120*	P		CHRYSENE	T	1.30E 03	2.00E-01	7.50E-01	3
17 A 060*		W	4-NITROBIPHENYL	T	7.70E 02	1.92E-01	7.31E-01	5
10 C 120*			4-AMINOBIPHENYL	T	7.70E 02	1.92E-01	7.31E-01	5
10 A 060*			ETHANOLAMINE	T	3.40E 03	1.90E-01	7.20E-01	6
23 A 100*		W	CHLOROPYRIDINES	T	3.40E 03	1.90E-01	7.20E-01	6
23 A 102*			3-CHLOROPYRIDINE	T	3.40E 03	1.90E-01	7.20E-01	6
23 A 103*			4-CHLOROPYRIDINE	T	3.40E 03	1.90E-01	7.20E-01	6
23 A 101*			2-CHLOROPYRIDINE	T	3.40E 03	1.90E-01	7.20E-01	6
02 A 160*	P		BROMOFORM	T	2.60E 03	1.73E-01	6.60E-01	1
21 C 160*			PICENE	T	1.30E 03	1.73E-01	6.60E-01	3

CYCLONE DUST, HEALTH IMPACT

DMEG NO.			COMPOUND NAME	TYPE	CONC E-6 G/G	DS	WDS G/S	LCCAT
23 C 020*			PYRROLE	T	1.40E 03	1.72E-01	6.60E-01	4
17 A 080*			DINITROTOLUENES	T	7.70E 02	1.71E-01	6.50E-01	5
17 A 084*	P		2,4-DINITROTOLUENE	T	7.70E 02	1.71E-01	6.50E-01	5
17 A 085*			2,5-DINITROTOLUENE	T	7.70E 02	1.71E-01	6.50E-01	5
17 A 083*			2,3-DINITROTOLUENE	T	7.70E 02	1.71E-01	6.50E-01	5
17 A 081*	P		2,6-DINITROTOLUENE	T	7.70E 02	1.71E-01	6.50E-01	5
17 A 086*			3,5-DINITROTOLUENE	T	7.70E 02	1.71E-01	6.50E-01	5
17 A 082*			3,4-DINITROTOLUENE	T	7.70E 02	1.71E-01	6.50E-01	5
09 A 120*		W	TETRAMETHYLSUCCINONITRILE	T	1.40E 03	1.60E-01	5.91E-01	4
21 C 120*			BENZO(E)PYRENE	T	1.30E 03	1.42E-01	5.42E-01	3
04 A 050*		W	EPICHLORHYDRIN	T	7.70E 02	1.30E-01	4.90E-01	5
04 A 040*		W	2-CHLORO-1,2-EPOXYPROPANE	T	7.70E 02	1.30E-01	4.90E-01	5
04 A 060*		W	1-CHLORO-1,3-EPOXYPROPANE	T	7.70E 02	1.30E-01	4.90E-01	5
03 B 020*		W	1,4-DIOXANE	T	1.40E 03	1.30E-01	4.83E-01	4
03 B 040*		W	1,3-DIOXANE	T	1.40E 03	1.30E-01	4.83E-01	4
21 D 020*			DIBENZO(A,H)PYRENE	T	1.30E 03	1.20E-01	4.50E-01	3
06 A 020*		W	ETHYLENE GLYCOL	T	3.40E 03	1.13E-01	4.30E-01	6
08 A 140*			OLEIC ACID	T	1.10E 03	1.10E-01	4.20E-01	7
23 B 200*			BENZ(C)ACRIDINE	T	3.40E 03	1.10E-01	4.03E-01	6
23 C 020*			PYRROLE	T	7.70E 02	9.50E-02	3.61E-01	5
07 B 100*		W	CAMPHOR	T	3.40E 03	9.44E-02	3.60E-01	6
17 A 020*	P		NITROBENZENE	T	1.40E 03	9.33E-02	3.54E-01	4
16 B 020		W	A-CHLOROTOLUENE	T	1.30E 03	8.70E-02	3.30E-01	3
09 A 120*		W	TETRAMETHYLSUCCINONITRILE	T	7.70E 02	8.60E-02	3.30E-01	5
08 D 080*			METHYL METHACRYLATE	T	3.40E 03	8.10E-02	3.10E-01	6
23 A 101*			2-CHLOROPYRIDINE	T	1.40E 03	7.80E-02	3.00E-01	4
23 A 100*		W	CHLOROPYRIDINES	T	1.40E 03	7.80E-02	3.00E-01	4
23 C 180*			DIBENZO(A,G)CARBAZOLE	T	1.40E 03	7.80E-02	3.00E-01	4
23 A 103*			4-CHLOROPYRIDINE	T	1.40E 03	7.80E-02	3.00E-01	4
23 A 102*			3-CHLOROPYRIDINE	T	1.40E 03	7.80E-02	3.00E-01	4
08 A 140*			OLEIC ACID	T	7.70E 02	7.70E-02	2.92E-01	5
02 B 103			CIS-1,3-DICHLOROPROPENE	T	2.60E 03	7.64E-02	2.90E-01	1
02 B 104			TRANS-1,3-DICHLOROPROPENE	T	2.60E 03	7.64E-02	2.90E-01	1
02 B 100*	P		DICHLOROPROPENES	T	2.60E 03	7.64E-02	2.90E-01	1

CYCLONE DUST, HEALTH IMPACT

DMEG NO.			COMPOUND NAME	TYPE	CONC E-6 G/G	DS	WDS G/S	LCCAT
23 A 020*			PYRIDINE	T	3.40E 03	7.60E-02	2.90E-01	6
23 B 022*			ISOQUINOLINE	T	3.40E 03	7.23E-02	2.74E-01	6
23 B 020*			QUINOLINES	T	3.40E 03	7.23E-02	2.74E-01	6
23 B 021*			QUINOLINE	T	3.40E 03	7.23E-02	2.74E-01	6
03 B 040*		W	1,3-DIOXANE	T	7.70E 02	7.00E-02	2.70E-01	5
03 B 020*		W	1,4-DIOXANE	T	7.70E 02	7.00E-02	2.70E-01	5
55 A 010			TELLURIUM	S	2.00E-01	6.70E-02	2.53E-01	
22 C 040			BENZO(J)FLUORANTHENE	T	1.30E 03	6.50E-02	2.50E-01	3
08 A 100*			SATURATED LONG CHAIN ACIDS (MW:116-201)	T	1.10E 03	6.50E-02	2.50E-01	7
08 A 103*			CAPRIC ACID	T	1.10E 03	6.50E-02	2.50E-01	7
08 A 102*			CAPRYLIC ACID	T	1.10E 03	6.50E-02	2.50E-01	7
08 A 104*			LAURIC ACID	T	1.10E 03	6.50E-02	2.50E-01	7
08 A 101*			CAPROIC ACID	T	1.10E 03	6.50E-02	2.50E-01	7
23 A 142*			2,4-DIMETHYLPYRIDINE	T	3.40E 03	6.30E-02	2.40E-01	6
23 A 146*			2,3,4,6-TETRAMETHYL PYRIDINE	T	3.40E 03	6.30E-02	2.40E-01	6
23 A 145*			3,4-DIMETHYLPYRIDINE	T	3.40E 03	6.30E-02	2.40E-01	6
23 A 140*			DISUBSTITUTED POLYSUBSTITUTED ALKYL PYRIDINES	T	3.40E 03	6.30E-02	2.40E-01	6
05 B 100*		W	1-PHENYLETHANOL	T	3.40E 03	6.30E-02	2.40E-01	6
23 A 144*			2,6-DIMETHYLPYRIDINE	T	3.40E 03	6.30E-02	2.40E-01	6
23 A 141*			2,3-DIMETHYLPYRIDINE	T	3.40E 03	6.30E-02	2.40E-01	6
23 A 143*			2,5-DIMETHYLPYRIDINE	T	3.40E 03	6.30E-02	2.40E-01	6
16 B 043			1,4-BIS(CHLOROMETHYL)BENZENE	T	1.30E 03	6.20E-02	2.40E-01	3
16 B 040			BIS(CHLOROMETHYL)BENZENES	T	1.30E 03	6.20E-02	2.40E-01	3
16 B 042			1,3-BIS(CHLOROMETHYL)BENZENE	T	1.30E 03	6.20E-02	2.40E-01	3
16 B 041			1,2-BIS(CHLOROMETHYBENZENE	T	1.30E 03	6.20E-02	2.40E-01	3
10 C 020*			ANILINE	T	3.40E 03	6.00E-02	2.30E-01	6
23 D 020*		W	BENZOTHIAZOLE	T	7.70E 02	5.92E-02	2.30E-01	5
23 D 040*			METHYL BENZOTHIAZOLE	T	7.70E 02	5.50E-02	2.10E-01	5
22 C 080*	P	W	BENZO(B)FLUORANTHENE	T	1.40E 02	5.20E-02	2.00E-01	2
08 D 283*			DI-N-BUTYL PHTHALATE	T	7.70E 02	5.13E-02	2.00E-01	5
08 D 280*	P	W	PHTHALATE ESTERS (MW:194-279)	T	7.70E 02	5.13E-02	2.00E-01	5
08 D 300*	P		DI-2-ETHYLHEXYL PHTHALATE	T	7.70E 02	5.13E-02	2.00E-01	5
08 D 282*			DIETHYL PHTHALATE	T	7.70E 02	5.13E-02	2.00E-01	5
17 A 020*	P		NITROBENZENE	T	7.70E 02	5.13E-02	2.00E-01	5

CYCLONE DUST, HEALTH IMPACT

DMEG NO.		COMPOUND NAME	TYPE	CONC E-6 G/G	DS	WDS G/S	LCCAT
08 D 281*		DIMETHYL PHTHALATE	T	7.70E 02	5.13E-02	2.00E-01	5
08 A 080*		VALERIC ACID	T	3.40E 03	5.00E-02	1.90E-01	6
23 B 260*		DIBENZ(C,H)ACRIDINE	T	3.40E 03	4.92E-02	1.90E-01	6
15 B 162		M-TERPHENYL	T	1.30E 03	4.81E-02	1.82E-01	3
15 B 160		TERPHENYLS	T	1.30E 03	4.81E-02	1.82E-01	3
15 B 161		O-TERPHENYL	T	1.30E 03	4.81E-02	1.82E-01	3
15 B 163		P-TERPHENYL	T	1.30E 03	4.81E-02	1.82E-01	3
12 A 060*	P	N-NITROSODIPROPYLAMINE	T	3.40E 03	4.72E-02	1.80E-01	6
15 A 160*	W	BIPHENYL	T	1.40E 02	4.70E-02	1.80E-01	2
10 C 062*		2,4-XYLIDINE	T	3.40E 03	4.53E-02	1.72E-01	6
07 B 080*	P	ISOPHORONE	T	3.40E 03	4.53E-02	1.72E-01	6
10 A 080*		1,2-DIAMINOETHANE	T	3.40E 03	4.53E-02	1.72E-01	6
10 C 066*		3,5-XYLIDINE	T	3.40E 03	4.53E-02	1.72E-01	6
10 C 060*		DIMETHYLANILINES	T	3.40E 03	4.53E-02	1.72E-01	6
10 C 064*		2,6-XYLIDINE	T	3.40E 03	4.53E-02	1.72E-01	6
10 C 063*		2,5-XYLIDINE	T	3.40E 03	4.53E-02	1.72E-01	6
10 D 020*	W	N,N-DIMETHYLANILINE	T	3.40E 03	4.53E-02	1.72E-01	6
10 C 065*		3,4-XYLIDINE	T	3.40E 03	4.53E-02	1.72E-01	6
10 C 061*		2,3-XYLIDINE	T	3.40E 03	4.53E-02	1.72E-01	6
08 A 100*		SATURATED LONG CHAIN ACIDS (MW:116-201)	T	7.70E 02	4.52E-02	1.72E-01	5
08 A 102*		CAPRYLIC ACID	T	7.70E 02	4.52E-02	1.72E-01	5
08 A 103*		CAPRIC ACID	T	7.70E 02	4.52E-02	1.72E-01	5
08 A 101*		CAPROIC ACID	T	7.70E 02	4.52E-02	1.72E-01	5
08 A 104*		LAURIC ACID	T	7.70E 02	4.52E-02	1.72E-01	5
08 A 040*		ACETIC ACID	T	3.40E 03	4.50E-02	1.70E-01	6
04 B 100*		2,2'-DICHLORODIISOPROPYL ETHER	T	1.40E 03	4.40E-02	1.70E-01	4
21 D 060*		DIBENZO(A,L)PYRENE	T	1.40E 02	4.40E-02	1.70E-01	2
21 C 060		DIBENZ(A,C)ANTHRACENE	T	1.30E 03	4.33E-02	1.64E-01	3
23 A 102*		3-CHLOROPYRIDINE	T	7.70E 02	4.30E-02	1.62E-01	5
10 A 060*		ETHANOLAMINE	T	7.70E 02	4.30E-02	1.62E-01	5
23 A 101*		2-CHLOROPYRIDINE	T	7.70E 02	4.30E-02	1.62E-01	5
23 A 100*	W	CHLOROPYRIDINES	T	7.70E 02	4.30E-02	1.62E-01	5
23 A 103*		4-CHLOROPYRIDINE	T	7.70E 02	4.30E-02	1.62E-01	5
23 C 180*		DIBENZO(A,G)CARBAZOLE	T	7.70E 02	4.30E-02	1.62E-01	5

CYCLONE DUST, HEALTH IMPACT

DMEG NO.		COMPOUND NAME	TYPE	CONC E-6 G/G	DS	WDS G/S	LCCAT
23 C 040*		INDOLE	T	1.40E 03	4.24E-02	1.61E-01	4
04 A 140*	P	2-CHLOROETHYL VINYL ETHER	T	1.40E 03	4.11E-02	1.60E-01	4
23 C 140*		DIBENZO(A,I)CARBAZOLE	T	1.40E 03	3.90E-02	1.50E-01	4
08 C 020		FORMAMIDE	T	3.40E 03	3.80E-02	1.43E-01	6
16 A 160*	P	POLYCHLORINATED BENZENES	T	1.30E 03	3.71E-02	1.41E-01	3
16 A 162		HEXACHLOROBENZENE	T	1.30E 03	3.61E-02	1.40E-01	3
16 A 161		1,2,4-TRICHLOROBENZENE	T	1.30E 03	3.61E-02	1.40E-01	3
08 A 060*		MALEIC ACID	T	3.40E 03	3.54E-02	1.34E-01	6
02 A 180*		DIBROMODICHLOROMETHANE	T	1.40E 02	3.33E-02	1.30E-01	2
23 A 020*		PYRIDINE	T	1.40E 03	3.11E-02	1.20E-01	4
10 A 120		PROPANOLAMINES	T	3.40E 03	3.10E-02	1.20E-01	6
12 A 080		N-NITROSODIISOPROPYLAMINE	T	3.40E 03	3.10E-02	1.20E-01	6
08 B 080		Y-BUTYROLACTONE	T	3.40E 03	3.10E-02	1.20E-01	6
10 A 121		2-AMINO-1-PROPANOL	T	3.40E 03	3.10E-02	1.20E-01	6
23 A 041*		2-METHYLPYRIDINE	T	3.40E 03	3.10E-02	1.20E-01	6
10 A 122		3-AMINO-1-PROPANOL	T	3.40E 03	3.10E-02	1.20E-01	6
10 A 123		1-AMINO-2-PROPANOL	T	3.40E 03	3.10E-02	1.20E-01	6
23 A 043*		4-METHYLPYRIDINE	T	3.40E 03	3.10E-02	1.20E-01	6
23 A 042*		3-METHYLPYRIDINE	T	3.40E 03	3.10E-02	1.20E-01	6
21 A 180*	P W	PHENANTHRENE	T	3.40E 03	3.10E-02	1.20E-01	6
22 D 020*	P W	INDENO(1,2,3-CD)PYRENE	T	1.40E 02	2.91E-02	1.10E-01	2
01 B 220	W	DICYCLOPENTADIENE	T	1.40E 02	2.91E-02	1.10E-01	2
22 C 020*	P	BENZO(K)FLUORANTHENE	T	2.60E 03	2.90E-02	1.10E-01	1
10 A 160		CYCLOHEXYLAMINE	T	1.40E 02	2.90E-02	1.10E-01	2
07 B 120		ACETOPHENONE	T	3.40E 03	2.83E-02	1.10E-01	6
08 B 041		2-HYDROXYBENZOIC ACID	T	3.40E 03	2.83E-02	1.10E-01	6
21 C 040		BENZO(G)CHRYSENE	T	3.40E 03	2.83E-02	1.10E-01	6
50 A 010	P	ANTIMONY	T	1.30E 03	2.70E-02	1.02E-01	3
23 A 141*		2,3-DIMETHYLPYRIDINE	D	< 4.00E-01<	2.70E-02<	1.01E-01	
23 A 146*		2,3,4,6-TETRAMETHYL PYRIDINE	T	1.40E 03	2.60E-02	9.90E-02	4
23 A 143*		2,5-DIMETHYLPYRIDINE	T	1.40E 03	2.60E-02	9.90E-02	4
23 A 142*		2,4-DIMETHYLPYRIDINE	T	1.40E 03	2.60E-02	9.90E-02	4
21 B 140*		METHYL CHRYSENES	T	1.40E 03	2.60E-02	9.90E-02	4
21 B 142*		5-METHYL CHRYSENE	T	1.40E 02	2.60E-02	9.90E-02	2
			T	1.40E 02	2.60E-02	9.90E-02	2

CYCLONE DUST, HEALTH IMPACT

DMEG NO.		COMPOUND NAME	TYPE	CONC E-6 G/G	DS	WDS G/S	LCCAT
23 A 144*		2,6-DIMETHYLPYRIDINE	T	1.40E 03	2.60E-02	9.90E-02	4
23 A 145*		3,4-DIMETHYLPYRIDINE	T	1.40E 03	2.60E-02	9.90E-02	4
21 B 141*		4-METHYL CHRYSENE	T	1.40E 02	2.60E-02	9.90E-02	2
23 A 140*		DISUBSTITUTED POLYSUBSTITUTED ALKYL PYRIDINES	T	1.40E 03	2.60E-02	9.90E-02	4
06 A 020*	W	ETHYLENE GLYCOL	T	7.70E 02	2.60E-02	9.80E-02	5
51 A 010		BISMUTH	S	3.00E-01	2.50E-02	9.50E-02	
23 C 120*		BENZO(A)CARBAZOLE	T	1.40E 03	2.50E-02	9.33E-02	4
05 C 040	W	T-PENTANOL	T	3.40E 03	2.42E-02	9.22E-02	6
04 B 100*		2,2'-DICHLORODIISOPROPYL ETHER	T	7.70E 02	2.40E-02	9.14E-02	5
23 B 200*		BENZ(C)ACRIDINE	T	7.70E 02	2.40E-02	9.14E-02	5
15 B 060*	W	4,4'-DIPHENYLBIPHENYL	T	1.40E 02	2.33E-02	8.90E-02	2
23 C 040*		INDOLE	T	7.70E 02	2.33E-02	8.90E-02	5
70 A 010		TUNGSTEN	S	< 7.00E-01<	2.33E-02<	8.90E-02	
04 A 140*	P	2-CHLOROETHYL VINYL ETHER	T	7.70E 02	2.30E-02	8.60E-02	5
57 A 010		CHLORINE (AS CL-)	D	5.70E 01	2.20E-02	8.33E-02	
23 C 140*		DIBENZO(A,I)CARBAZOLE	T	7.70E 02	2.13E-02	8.12E-02	5
07 B 100*	W	CAMPHOR	T	7.70E 02	2.13E-02	8.12E-02	5
21 B 120*	P	CHRYSENE	T	1.40E 02	2.12E-02	8.10E-02	2
09 A 100*		1,3-DICYANO-1-HYDROXYBUTANE	T	1.40E 03	2.12E-02	8.10E-02	4
09 A 080*		BUTYRONITRILE	T	1.40E 03	2.12E-02	8.10E-02	4
23 C 102*		9-METHYLCARBAZOLE	T	1.40E 03	2.10E-02	7.82E-02	4
23 C 101*		3-METHYLCARBAZOLE	T	1.40E 03	2.10E-02	7.82E-02	4
23 C 100*		METHYLCARBAZOLES	T	1.40E 03	2.10E-02	7.82E-02	4
23 C 080*		CARBAZOLE	T	3.40E 03	2.00E-02	7.60E-02	6
23 B 061		2,3-DIMETHYLQUINOLINE	T	3.40E 03	2.00E-02	7.60E-02	6
23 B 065		6,8-DIMETHYLQUINOLINE	T	3.40E 03	2.00E-02	7.60E-02	6
23 B 040		2-METHYLQUINOLINE	T	3.40E 03	2.00E-02	7.60E-02	6
23 B 067		1,5-DIMETHYLISOQUINOLINE	T	3.40E 03	2.00E-02	7.60E-02	6
23 B 060		DIMETHYLQUINOLINES	T	3.40E 03	2.00E-02	7.60E-02	6
23 B 064		3,4-DIMETHYLQUINOLINE	T	3.40E 03	2.00E-02	7.60E-02	6
23 B 063		2,8-DIMETHYLQUINOLINE	T	3.40E 03	2.00E-02	7.60E-02	6
23 B 062		2,6-DIMETHYLQUINOLINE	T	3.40E 03	2.00E-02	7.60E-02	6
23 B 066		1,3-DIMETHYLISOQUINOLINE	T	3.40E 03	2.00E-02	7.60E-02	6
25 A 040*		METHYLTHIOPHENES	T	1.40E 03	2.00E-02	7.60E-02	4

CYCLONE DUST, HEALTH IMPACT

DMEG NO.		COMPOUND NAME	TYPE	CONC E-6 G/G	DS	WDS G/S	LCCAT
05 A 140	W	BENZYL ALCOHOL	T	3.40E 03	2.00E-02	7.60E-02	6
25 B 040*	W	BENZO(B)THIOPHENE	T	1.40E 03	2.00E-02	7.60E-02	4
25 A 042*		3-METHYLTHIOPHENE	T	1.40E 03	2.00E-02	7.60E-02	4
25 A 041*		2-METHYLTHIOPHENE	T	1.40E 03	2.00E-02	7.60E-02	4
08 D 160		METHYL BENZOATE	T	3.40E 03	1.90E-02	7.20E-02	6
21 C 160*		PICENE	T	1.40E 02	1.90E-02	7.10E-02	2
02 A 140*	P	DIBROMOCHLOROMETHANE	T	2.60E 03	1.90E-02	7.10E-02	1
08 D 080*		METHYL METHACRYLATE	T	7.70E 02	1.85E-02	7.00E-02	5
25 A 061		2,3-DIMETHYLTHIOPHENE	T	1.40E 03	1.81E-02	6.90E-02	4
25 A 064		3,4-DIMETHYLTHIOPHENE	T	1.40E 03	1.81E-02	6.90E-02	4
25 A 060		DIMETHYLTHIOPHENES	T	1.40E 03	1.81E-02	6.90E-02	4
25 A 062		2,4-DIMETHYLTHIOPHENE	T	1.40E 03	1.81E-02	6.90E-02	4
25 A 063		2,5-DIMETHYLTHIOPHENE	T	1.40E 03	1.81E-02	6.90E-02	4
04 A 200		4-BROMOPHENYL PHENYL ETHER	T	1.40E 03	1.72E-02	6.60E-02	4
04 A 180*	P	CHLOROPHENYL PHENYL ETHER	T	1.40E 03	1.72E-02	6.60E-02	4
23 A 020*		PYRIDINE	T	7.70E 02	1.71E-02	6.50E-02	5
23 B 021*		QUINOLINE	T	7.70E 02	1.63E-02	6.22E-02	5
23 B 022*		ISOQUINOLINE	T	7.70E 02	1.63E-02	6.22E-02	5
23 B 020*		QUINOLINES	T	7.70E 02	1.63E-02	6.22E-02	5
23 A 081		2-PHENYLPYRIDINE	T	3.40E 03	1.61E-02	6.20E-02	6
23 A 080		PHENYLPYRIDINES	T	3.40E 03	1.61E-02	6.20E-02	6
10 B 100		MORPHOLINE	T	3.40E 03	1.61E-02	6.20E-02	6
23 A 120		COLLIDINES	T	3.40E 03	1.61E-02	6.20E-02	6
23 A 122		2,4,6-COLLIDINE	T	3.40E 03	1.61E-02	6.20E-02	6
23 A 121		5-ETHYL-2-METHYLPYRIDINE	T	3.40E 03	1.61E-02	6.20E-02	6
23 A 083		4-PHENYLPYRIDINE	T	3.40E 03	1.61E-02	6.20E-02	6
23 A 064		4-N-PROPYLPYRIDINE	T	3.40E 03	1.61E-02	6.20E-02	6
23 A 060		MONOSUBSTITUTED ALKYL PYRIDINES	T	3.40E 03	1.61E-02	6.20E-02	6
23 A 062		3-ETHYLPYRIDINE	T	3.40E 03	1.61E-02	6.20E-02	6
23 A 061		2-ETHYLPYRIDINE	T	3.40E 03	1.61E-02	6.20E-02	6
23 A 063		4-ETHYLPYRIDINE	T	3.40E 03	1.61E-02	6.20E-02	6
23 A 082		3-PHENYLPYRIDINE	T	3.40E 03	1.61E-02	6.20E-02	6
08 A 080*		VALERIC ACID	T	3.40E 03	1.61E-02	6.20E-02	6
25 A 081		2,3,5-TRIMETHYLTHIOPHENE	T	1.10E 03	1.61E-02	6.14E-02	7
			T	1.40E 03	1.60E-02	6.11E-02	4

CYCLONE DUST, HEALTH IMPACT

DMEG NO.		COMPOUND NAME	TYPE	CONC E-6 G/G	DS	WDS G/S	LCCAT
25 A 080		TRIMETHYL AND TETRAMETHYL THIOPHENES	T	1.40E 03	1.60E-02	6.11E-02	4
04 B 080		2,2'-DICHLORODIETHYL ETHER	T	1.40E 03	1.60E-02	5.91E-02	4
17 A 043		4-NITROTOLUENE	T	1.40E 03	1.60E-02	5.91E-02	4
17 A 041		2-NITROTOLUENE	T	1.40E 03	1.60E-02	5.91E-02	4
17 A 042		3-NITROTOLUENE	T	1.40E 03	1.60E-02	5.91E-02	4
17 A 040		NITROTOLUENES	T	1.40E 03	1.60E-02	5.91E-02	4
04 B 040*	P	1,1'-DICHLORODIETHYL ETHER	T	1.40E 03	1.60E-02	5.91E-02	4
07 B 180		CARVONES	T	3.40E 03	1.54E-02	5.90E-02	6
07 B 182		DIHYDRO-(D OR L)CARVONE	T	3.40E 03	1.54E-02	5.90E-02	6
07 B 181		CARVONE(D OR L)	T	3.40E 03	1.54E-02	5.90E-02	6
08 D 200		DIETHYL ADIPATE	T	1.40E 02	1.53E-02	5.84E-02	2
21 C 120*		BENZO(E)PYRENE	T	2.60E 03	1.52E-02	5.81E-02	1
02 A 361		1-BROMOBUTANE	T	2.60E 03	1.52E-02	5.81E-02	1
02 A 360		BROMOBUTANES	T	1.10E 03	1.44E-02	5.50E-02	7
08 A 040*		ACETIC ACID	T	1.40E 03	1.42E-02	5.42E-02	4
09 B 041		A-NAPHTHONITRILES	T	1.40E 03	1.42E-02	5.42E-02	4
09 B 020	W	BENZONITRILE	T	1.40E 03	1.42E-02	5.42E-02	4
09 B 040	W	NAPHTHONITRILES	T	1.40E 03	1.42E-02	5.42E-02	4
09 B 042		B-NAPHTHONITRILES	T	7.70E 02	1.42E-02	5.41E-02	5
05 B 100*	W	1-PHENYLETHANOL	T	7.70E 02	1.42E-02	5.41E-02	5
23 A 143*		2,5-DIMETHYLPYRIDINE	T	7.70E 02	1.42E-02	5.41E-02	5
23 A 140*		DISUBSTITUTED POLYSUBSTITUTED ALKYL PYRIDINES	T	7.70E 02	1.42E-02	5.41E-02	5
23 A 144*		2,6-DIMETHYLPYRIDINE	T	7.70E 02	1.42E-02	5.41E-02	5
23 A 142*		2,4-DIMETHYLPYRIDINE	T	7.70E 02	1.42E-02	5.41E-02	5
23 A 145*		3,4-DIMETHYLPYRIDINE	T	7.70E 02	1.42E-02	5.41E-02	5
23 A 141*		2,3-DIMETHYLPYRIDINE	T	7.70E 02	1.42E-02	5.41E-02	5
23 A 146*		2,3,4,6-TETRAMETHYL PYRIDINE	T	3.40E 03	1.41E-02	5.40E-02	6
05 A 160		PHENETHYL ALCOHOL	T	3.40E 03	1.41E-02	5.40E-02	6
12 A 100		N-NITROSODIPENTYLAMINE	S	1.50E 01	1.40E-02	5.20E-02	
84 B 010		CERIUM	T	7.70E 02	1.40E-02	5.13E-02	5
10 C 020*		ANILINE	T	7.70E 02	1.40E-02	5.13E-02	5
23 C 120*		BENZO(A)CARBAZOLE	S	2.00E 00	1.33E-02	5.10E-02	
69 A 010		MOLYBDENUM	T	1.40E 02	1.30E-02	4.83E-02	2
21 D 020*		DIBENZO(A,H)PYRENE					

CYCLONE DUST, HEALTH IMPACT

DMEG NO.		COMPOUND NAME	TYPE	CONC E-6 G/G	DS	WDS G/S	LCCAT
23 A 042*		3-METHYLPYRIDINE	T	1.40E 03	1.30E-02	4.83E-02	4
23 A 043*		4-METHYLPYRIDINE	T	1.40E 03	1.30E-02	4.83E-02	4
23 A 041*		2-METHYLPYRIDINE	T	1.40E 03	1.30E-02	4.83E-02	4
23 B 160		BENZO(H)QUINOLINE	T	3.40E 03	1.30E-02	4.80E-02	6
23 B 140		BENZO(F)QUINOLINE	T	3.40E 03	1.30E-02	4.80E-02	6
23 B 120		PHENANTHRIDINE	T	3.40E 03	1.30E-02	4.80E-02	6
05 B 120		BORNEOL	T	3.40E 03	1.30E-02	4.80E-02	6
13 B 080		METHYL DISULFIDE	T	3.40E 03	1.30E-02	4.80E-02	6
23 B 080		ACRIDINE	T	3.40E 03	1.30E-02	4.80E-02	6
13 B 060		DIPHENYL SULFIDE	T	3.40E 03	1.20E-02	4.50E-02	6
09 A 100*		1,3-DICYANO-1-HYDROXYBUTANE	T	7.70E 02	1.20E-02	4.43E-02	5
02 B 120*	P	HEXACHLOROBUTADIENE	T	1.40E 02	1.20E-02	4.43E-02	2
09 A 080*		BUTYRONITRILE	T	7.70E 02	1.20E-02	4.43E-02	5
08 A 060*		MALEIC ACID	T	1.10E 03	1.14E-02	4.40E-02	7
23 C 100*		METHYLCARBAZOLES	T	7.70E 02	1.13E-02	4.30E-02	5
23 C 080*		CARBAZOLE	T	7.70E 02	1.13E-02	4.30E-02	5
23 C 101*		3-METHYLCARBAZOLE	T	7.70E 02	1.13E-02	4.30E-02	5
23 C 102*		9-METHYLCARBAZOLE	T	7.70E 02	1.13E-02	4.30E-02	5
08 A 080*		VALERIC ACID	T	7.70E 02	1.13E-02	4.30E-02	5
23 B 260*		DIBENZ(C,H)ACRIDINE	T	7.70E 02	1.11E-02	4.24E-02	5
25 A 042*		3-METHYLTHIOPHENE	T	7.70E 02	1.10E-02	4.20E-02	5
25 B 040*	W	BENZO(B)THIOPHENE	T	7.70E 02	1.10E-02	4.20E-02	5
25 A 040*		METHYLTHIOPHENES	T	7.70E 02	1.10E-02	4.20E-02	5
25 A 041*		2-METHYLTHIOPHENE	T	7.70E 02	1.10E-02	4.20E-02	5
12 A 060*	P	N-NITROSODIPROPYLAMINE	T	7.70E 02	1.10E-02	4.10E-02	5
10 C 060*		DIMETHYLANILINES	T	7.70E 02	1.02E-02	3.90E-02	5
10 C 063*		2,5-XYLIDINE	T	7.70E 02	1.02E-02	3.90E-02	5
10 C 061*		2,3-XYLIDINE	T	7.70E 02	1.02E-02	3.90E-02	5
10 C 065*		3,4-XYLIDINE	T	7.70E 02	1.02E-02	3.90E-02	5
10 D 020*	W	N,N-DIMETHYLANILINE	T	7.70E 02	1.02E-02	3.90E-02	5
10 C 066*		3,5-XYLIDINE	T	7.70E 02	1.02E-02	3.90E-02	5
10 C 064*		2,6-XYLIDINE	T	7.70E 02	1.02E-02	3.90E-02	5
10 A 080*		1,2-DIAMINOETHANE	T	7.70E 02	1.02E-02	3.90E-02	5
10 C 062*		2,4-XYLIDINE	T	7.70E 02	1.02E-02	3.90E-02	5

CYCLONE DUST, HEALTH IMPACT

DMEG NO.			COMPOUND NAME	TYPE	CONC E-6 G/G	DS	WDS G/S	LCCAT
07 B 080*	P		ISOPHORONE	T	7.70E 02	1.02E-02	3.90E-02	5
08 A 040*			ACETIC ACID	T	7.70E 02	1.01E-02	3.90E-02	5
04 A 180*	P		CHLOROPHENYL PHENYL ETHER	T	7.70E 02	9.50E-03	3.61E-02	5
02 A 160*	P		BROMOFORM	T	1.40E 02	9.33E-03	3.54E-02	2
21 A 020*	P		NAPHTHALENE	T	1.30E 03	8.70E-03	3.30E-02	3
04 B 040*	P		1,1'-DICHLORODIETHYL ETHER	T	7.70E 02	8.60E-03	3.30E-02	5
08 D 320*	P		BUTYL BENZYL PHTHALATE	T	3.40E 03	7.90E-03	3.00E-02	6
66 A 010			NIOBIUM (AS NB+3)	S	5.00E 00	7.70E-03	2.92E-02	
21 A 140*	P		ANTHRACENE	T	1.30E 03	7.64E-03	2.90E-02	3
85 A 010			URANIUM	S	9.00E-01	7.50E-03	2.84E-02	
16 A 200*	P		CHLORONAPHTHALENES	T	1.30E 03	6.20E-03	2.40E-02	3
22 B 040*	P	W	FLUORANTHENE	T	1.30E 03	4.64E-03	1.80E-02	3
02 B 100*	P		DICHLOROPROPENES	T	1.40E 02	4.11E-03	1.60E-02	2
16 A 160*	P		POLYCHLORINATED BENZENES	T	1.40E 02	4.00E-03	1.51E-02	2
60 A 010			SCANDIUM	S	5.00E 00	3.12E-03	1.20E-02	
02 A 340*	P		DICHLOROPROPANES	T	2.60E 03	2.60E-03	9.90E-03	1
84 A 010			LANTHANUM	S	8.00E 00	2.40E-03	8.94E-03	
21 B 180*	P		PYRENE	T	1.30E 03	1.90E-03	7.20E-03	3
08 D 320*	P		BUTYL BENZYL PHTHALATE	T	7.70E 02	1.80E-03	6.80E-03	5
16 A 120*	P		1,3-DICHLOROBENZENE	T	1.30E 03	1.44E-03	5.50E-03	3
16 A 100*	P		1,2-DICHLOROBENZENE	T	1.30E 03	1.44E-03	5.50E-03	3
84 C 010			PRASEODYMIUM	S	2.00E 00	1.33E-03	5.10E-03	
84 F 010			DYSPROSIUM	S	6.00E-01	1.30E-03	5.00E-03	
02 B 080*	P		TETRACHLOROETHENE	T	2.60E 03	1.30E-03	4.93E-03	1
84 E 010			SAMARIUM	S	2.00E 00	1.30E-03	4.74E-03	
15 A 040*	P		TOLUENE	T	1.30E 03	1.20E-03	4.50E-03	3
16 A 020*	P		CHLOROBENZENE	T	1.30E 03	1.20E-03	4.50E-03	3
02 A 140*	P		DIBROMOCHLOROMETHANE	T	1.40E 02	1.00E-03	3.80E-03	2
15 A 060*	P		ETHYL BENZENE	T	1.30E 03	1.00E-03	3.80E-03	3
21 A 020*	P		NAPHTHALENE	T	1.40E 02	9.33E-04	3.54E-03	2
16 A 140*	P		1,4-DICHLOROBENZENE	T	1.30E 03	9.30E-04	3.52E-03	3
30 A 010			RUBIDIUM (AS RB+)	S	3.00E 00	8.53E-04	3.20E-03	
21 A 140*	P		ANTHRACENE	T	1.40E 02	8.23E-04	3.12E-03	2
16 A 200*	P		CHLORONAPHTHALENES	T	1.40E 02	6.70E-04	2.53E-03	2

CYCLONE DUST, HEALTH IMPACT

DMEG NO.	COMPOUND NAME	TYPE	CONC E-6 G/G	DS	WDS G/S	LCCAT
22 B 040* P W	FLUORANTHENE	T	1.40E 02	5.00E-04	1.90E-03	2
31 A 010	CESIUM	S	7.00E-01	2.80E-04	1.10E-03	
21 B 180* P	PYRENE	T	1.40E 02	2.02E-04	7.71E-04	2
16 A 120* P	1,3-DICHLOROBENZENE	T	1.40E 02	1.60E-04	5.91E-04	2
16 A 100* P	1,2-DICHLOROBENZENE	T	1.40E 02	1.60E-04	5.91E-04	2
02 A 340* P	DICHLOROPROPANES	T	1.40E 02	1.40E-04	5.31E-04	2
15 A 040* P	TOLUENE	T	1.40E 02	1.30E-04	4.83E-04	2
16 A 020* P	CHLOROBENZENE	T	1.40E 02	1.30E-04	4.83E-04	2
15 A 060* P	ETHYL BENZENE	T	1.40E 02	1.10E-04	4.10E-04	2
16 A 140* P	1,4-DICHLOROBENZENE	T	1.40E 02	1.00E-04	3.80E-04	2
02 B 080* P	TETRACHLOROETHENE	T	1.40E 02	7.00E-05	2.70E-04	2
45 A 010	TIN	S	2.00E 00	0.00E-01	0.00E-01	
04 A 160* P	A-CHLOROBUTYL ETHYL ETHER	T	1.40E 03	0.00E-01	0.00E-01	4
21 A 120* PH	ACENAPHTHYLENE	T	1.40E 02	0.00E-01	0.00E-01	2
21 A 120* PH	ACENAPHTHYLENE	T	1.30E 03	0.00E-01	0.00E-01	3
21 D 080* PH	BENZO(GHI)PERYLENE	T	1.30E 03	0.00E-01	0.00E-01	3
22 A 020* PH	FLUORENE	T	1.40E 02	0.00E-01	0.00E-01	2
21 A 100* PH	ACENAPHTHENE	T	1.40E 02	0.00E-01	0.00E-01	2
21 A 100* PH	ACENAPHTHENE	T	1.30E 03	0.00E-01	0.00E-01	3
29 A 010	POTASSIUM	D	1.30E 03	0.00E-01	0.00E-01	
53 A 010	SULFUR	D	1.10E 04	0.00E-01	0.00E-01	
84 D 010	NEODYMIUM	S	3.00E 00	0.00E-01	0.00E-01	
22 A 020* PH	FLUORENE	T	1.30E 03	0.00E-01	0.00E-01	3
21 D 080* PH	BENZO(GHI)PERYLENE	T	1.40E 02	0.00E-01	0.00E-01	2
58 A 010	BROMINE	S	9.00E 00	0.00E-01	0.00E-01	
59 A 010	IODINE (AS I-)	S	4.00E-01	0.00E-01	0.00E-01	
04 A 160* P	A-CHLOROBUTYL ETHYL ETHER	T	7.70E 02	0.00E-01	0.00E-01	5

CYCLONE DUST

AVERAGE FLOW RATE = 3.8 G/S

207.15 G EXTRACTED TOTAL ORGANIC LOADING = 13 G/KG

TOTAL TCO = 0.66 G/KG TOTAL GRAV = 12.0 G/KG

3.4% ORIGINAL SAMPLE TO LC

LC TCO = 3.2 MG LC GRAV = 88.2 MG LC TOTAL = 91.4 MG

LCCAT	ORGANIC LOADING
1	2600.0
2	140.0
3	1300.0
4	1400.0
5	770.0
6	3400.0
7	1100.0

FLOW RATE = 3.80

STATE: SOLID, UNITS IN MICROGRAMS/G

IMPACT: ECOLOGY

EXPERIMENTALY DETERMINED DATA

SPARK SOURCE DATA

CYCLONE DUST, ECOLOGY IMPACT

DMEG NO.			COMPOUND NAME	TYPE	CONC E-6 G/G	DS	WDS G/S	LCCAT
16 A 220*		W	POLYCHLORINATED BIPHENYLS	T	1.30E 03	1.30E 06	4.94E 06	3
02 A 380*		W	HEXACHLOROCYCLOHEXANE	T	2.60E 03	6.50E 05	2.50E 06	1
16 A 220*		W	POLYCHLORINATED BIPHENYLS	T	1.40E 02	1.40E 05	5.32E 05	2
02 A 380*		W	HEXACHLOROCYCLOHEXANE	T	1.40E 02	3.50E 04	1.32E 05	2
48 A 010			PHOSPHORUS	D	5.90E 02	5.90E 03	2.24E 04	
08 D 281*			DIMETHYL PHTHALATE	T	3.40E 03	4.24E 03	1.61E 04	6
08 D 283*			DI-N-BUTYL PHTHALATE	T	3.40E 03	4.24E 03	1.61E 04	6
08 D 282*			DIETHYL PHTHALATE	T	3.40E 03	4.24E 03	1.61E 04	6
08 D 280*	P	W	PHTHALATE ESTERS (MW:194-279)	T	3.40E 03	4.24E 03	1.61E 04	6
08 D 283*			DI-N-BUTYL PHTHALATE	T	7.70E 02	9.62E 02	3.70E 03	5
08 D 282*			DIETHYL PHTHALATE	T	7.70E 02	9.62E 02	3.70E 03	5
08 D 281*			DIMETHYL PHTHALATE	T	7.70E 02	9.62E 02	3.70E 03	5
08 D 280*	P	W	PHTHALATE ESTERS (MW:194-279)	T	7.70E 02	9.62E 02	3.70E 03	5
19 A 060*	P	W	PENTACHLOROPHENOL	T	3.40E 03	6.80E 02	2.60E 03	6
72 A 010			IRON (AS FE+2)	D	9.20E 03	1.84E 02	7.00E 02	
20 A 102*			2,5-DINITROPHENOL	T	3.40E 03	1.70E 02	6.50E 02	6
20 A 101*	P		2,4-DINITROPHENOL	T	3.40E 03	1.70E 02	6.50E 02	6
20 A 100*		W	DINITROPHENOLS	T	3.40E 03	1.70E 02	6.50E 02	6
20 A 080*		W	2-AMINO-4,6-DINITROPHENOL	T	3.40E 03	1.70E 02	6.50E 02	6
20 A 103*			2,6-DINITROPHENOL	T	3.40E 03	1.70E 02	6.50E 02	6
10 C 220*		W	2-AMINONAPHTHALENE	T	3.40E 03	1.70E 02	6.50E 02	6
10 C 200*		W	1-AMINONAPHTHALENE	T	3.40E 03	1.70E 02	6.50E 02	6
10 C 140*	P	W	BENZIDINE	T	7.70E 02	1.54E 02	5.90E 02	5
19 A 060*	P	W	PENTACHLOROPHENOL	T	2.60E 03	1.30E 02	4.94E 02	1
01 B 220		W	DICYCLOPENTADIENE	T	1.30E 03	6.50E 01	2.50E 02	3
16 A 063*			1,4-DIBROMOBENZENE	T	1.30E 03	6.50E 01	2.50E 02	3
16 A 162*			HEXACHLOROBENZENE	T	1.30E 03	6.50E 01	2.50E 02	3
16 A 061*			1,2-DIBROMOBENZENE	T	1.30E 03	6.50E 01	2.50E 02	3
16 A 060*			DIBROMOBENZENES	T	1.30E 03	6.50E 01	2.50E 02	3
16 A 160*	P		POLYCHLORINATED BENZENES	T	1.30E 03	6.50E 01	2.50E 02	3
16 B 020*		W	A-CHLOROTOLUENE	T	1.30E 03	6.50E 01	2.50E 02	3
16 A 161*			1,2,4-TRICHLOROBENZENE	T	1.30E 03	6.50E 01	2.50E 02	3
16 B 043*			1,4-BIS(CHLOROMETHYL)BENZENE	T	1.30E 03	6.50E 01	2.50E 02	3
16 A 080*			BROMOCHLOROBENZENES					

CYCLONE DUST, ECOLOGY IMPACT

DMEG NO.			COMPOUND NAME	TYPE	CONC E-6 G/G	DS	WDS G/S	LCCAT
21 A 020*	P		NAPHTHALENE	T	1.30E 03	6.50E 01	2.50E 02	3
16 A 081*			1-BROMO-2-CHLOROBENZENE	T	1.30E 03	6.50E 01	2.50E 02	3
16 A 140*	P		1,4-DICHLOROBENZENE	T	1.30E 03	6.50E 01	2.50E 02	3
16 A 040*			BROMOBENZENE	T	1.30E 03	6.50E 01	2.50E 02	3
16 A 083*			1-BROMO-4-CHLOROBENZENE	T	1.30E 03	6.50E 01	2.50E 02	3
16 A 120*	P		1,3-DICHLOROBENZENE	T	1.30E 03	6.50E 01	2.50E 02	3
16 A 100*	P		1,2-DICHLOROBENZENE	T	1.30E 03	6.50E 01	2.50E 02	3
16 B 040*			BIS(CHLOROMETHYL)BENZENES	T	1.30E 03	6.50E 01	2.50E 02	3
16 B 042*			1,3-BIS(CHLOROMETHYL)BENZENE	T	1.30E 03	6.50E 01	2.50E 02	3
16 A 062*			1,3-DIBROMOBENZENE	T	1.30E 03	6.50E 01	2.50E 02	3
16 B 041*			1,2-BIS(CHLOROMETHYBENZENE	T	1.30E 03	6.50E 01	2.50E 02	3
16 A 082*			1-BROMO-3-CHLOROBENZENE	T	1.30E 03	6.50E 01	2.50E 02	3
16 A 020*	P		CHLOROBENZENE	T	1.30E 03	6.50E 01	2.50E 02	3
38 A 010			ALUMINUM	D	1.20E 04	6.00E 01	2.30E 02	
26 B 040		W	TRITOTYL PHOSPHATES	T	1.10E 03	5.50E 01	2.10E 02	7
10 C 140*	P	W	BENZIDINE	T	7.70E 02	3.90E 01	1.50E 02	5
20 A 103*			2,6-DINITROPHENOL	T	7.70E 02	3.90E 01	1.50E 02	5
20 A 101*	P		2,4-DINITROPHENOL	T	7.70E 02	3.90E 01	1.50E 02	5
10 C 220*		W	2-AMINONAPHTHALENE	T	7.70E 02	3.90E 01	1.50E 02	5
20 A 100*		W	DINITROPHENOLS	T	7.70E 02	3.90E 01	1.50E 02	5
10 C 200*		W	1-AMINONAPHTHALENE	T	7.70E 02	3.90E 01	1.50E 02	5
20 A 102*			2,5-DINITROPHENOL	T	7.70E 02	3.90E 01	1.50E 02	5
20 A 080*		W	2-AMINO-4,6-DINITROPHENOL	T	7.70E 02	3.90E 01	1.50E 02	5
18 B 040*		W	1,3-DIHYDROXYBENZENE	T	3.40E 03	3.40E 01	1.30E 02	6
18 A 101*			O-PHENYLPHENOL	T	3.40E 03	3.40E 01	1.30E 02	6
18 A 020*	P	W	PHENOL	T	3.40E 03	3.40E 01	1.30E 02	6
18 A 140*		W	XYLENOLS	T	3.40E 03	3.40E 01	1.30E 02	6
18 B 020*		W	CATECHOL	T	3.40E 03	3.40E 01	1.30E 02	6
18 A 180*		W	POLYALKYLPHENOLS (MW>135)	T	3.40E 03	3.40E 01	1.30E 02	6
18 A 080*		W	ETHYLPHENOLS	T	3.40E 03	3.40E 01	1.30E 02	6
18 A 181*			2,4,6-TRIMETHYL METHYL PHENOL	T	3.40E 03	3.40E 01	1.30E 02	6
18 A 081*			O-ETHYLPHENOL	T	3.40E 03	3.40E 01	1.30E 02	6
18 A 102*			P-PHENYLPHENOL	T	3.40E 03	3.40E 01	1.30E 02	6
23 B 080*		W	ACRIDINE	T	3.40E 03	3.40E 01	1.30E 02	6

CYCLONE DUST, ECOLOGY IMPACT

DMEG NO.			COMPOUND NAME	TYPE	CONC E-6 G/G	DS	WDS G/S	LCCAT
18 A 163*			2-ETHYL-P-CRESOL	T	3.40E 03	3.40E 01	1.30E 02	6
18 A 183*			2,6-DIMETHYL-4-HEPTYL PHENOL	T	3.40E 03	3.40E 01	1.30E 02	6
18 A 120*		W	2,2'-DIHYDROXYDIPHENYL	T	3.40E 03	3.40E 01	1.30E 02	6
20 A 020*	P		2-NITROPHENOL	T	3.40E 03	3.40E 01	1.30E 02	6
18 C 083*			5-INDANOL	T	3.40E 03	3.40E 01	1.30E 02	6
20 A 040*			3-NITROPHENOL	T	3.40E 03	3.40E 01	1.30E 02	6
18 B 060*		W	1,4-DIHYDROXYBENZENE	T	3.40E 03	3.40E 01	1.30E 02	6
20 B 041*			3,5-DINITRO-P-CRESOL	T	3.40E 03	3.40E 01	1.30E 02	6
18 B 080*		W	1,2,3-TRIHYDROXYBENZENE	T	3.40E 03	3.40E 01	1.30E 02	6
18 A 083*			P-ETHYLPHENOL	T	3.40E 03	3.40E 01	1.30E 02	6
18 C 020*		W	1-NAPHTHOL	T	3.40E 03	3.40E 01	1.30E 02	6
18 A 100*		W	PHENYLPHENOLS	T	3.40E 03	3.40E 01	1.30E 02	6
18 C 040*		W	2-NAPHTHOL	T	3.40E 03	3.40E 01	1.30E 02	6
19 B 021*			CHLORINATED-O-CRESOLS	T	3.40E 03	3.40E 01	1.30E 02	6
18 A 182*			4,6-DI-TERT-BUTYL-M-CRESOL	T	3.40E 03	3.40E 01	1.30E 02	6
18 A 042*			O-CRESOL	T	3.40E 03	3.40E 01	1.30E 02	6
19 B 023*			CHLORINATED-P-CRESOLS	T	3.40E 03	3.40E 01	1.30E 02	6
18 A 043*			P-CRESOL	T	3.40E 03	3.40E 01	1.30E 02	6
18 A 103*			M-PHENYLPHENOL	T	3.40E 03	3.40E 01	1.30E 02	6
18 C 082*			4-INDANOL	T	3.40E 03	3.40E 01	1.30E 02	6
18 A 146*			3,4-XYLENOL	T	3.40E 03	3.40E 01	1.30E 02	6
20 A 120*			2,4,6-TRINITROPHENOL	T	3.40E 03	3.40E 01	1.30E 02	6
19 A 020*	P		2-CHLOROPHENOL	T	3.40E 03	3.40E 01	1.30E 02	6
20 A 060*	P		4-NITROPHENOL	T	3.40E 03	3.40E 01	1.30E 02	6
19 A 040*	P		2,4-DICHLOROPHENOL	T	3.40E 03	3.40E 01	1.30E 02	6
18 A 082*			M-ETHYLPHENOL	T	3.40E 03	3.40E 01	1.30E 02	6
20 B 042*			2,6-DINITRO-P-CRESOL	T	3.40E 03	3.40E 01	1.30E 02	6
18 A 142*	P		2,4-XYLENOL	T	3.40E 03	3.40E 01	1.30E 02	6
19 B 020*		W	CHLORINATED CRESOLS	T	3.40E 03	3.40E 01	1.30E 02	6
18 A 143*			2,5-XYLENOL	T	3.40E 03	3.40E 01	1.30E 02	6
18 A 041*			M-CRESOL	T	3.40E 03	3.40E 01	1.30E 02	6
18 A 144*			2,6-XYLENOL	T	3.40E 03	3.40E 01	1.30E 02	6
19 B 022*	P		CHLORINATED-M-CRESOLS	T	3.40E 03	3.40E 01	1.30E 02	6
18 A 145*			3,5-XYLENOL	T	3.40E 03	3.40E 01	1.30E 02	6

CYCLONE DUST, ECOLOGY IMPACT

DMEG NO.			COMPOUND NAME	TYPE	CONC E-6 G/G	DS	WDS G/S	LCCAT
18 C 081*			1-INDANOL	T	3.40E 03	3.40E 01	1.30E 02	6
18 A 060*		W	2-METHOXYPHENOL	T	3.40E 03	3.40E 01	1.30E 02	6
18 A 040*		W	CRESOLS	T	3.40E 03	3.40E 01	1.30E 02	6
18 A 160*		W	ETHYL CRESOLS	T	3.40E 03	3.40E 01	1.30E 02	6
20 B 040*		W	DINITRO-P-CRESOLS	T	3.40E 03	3.40E 01	1.30E 02	6
18 A 161*			6-ETHYL-M-CRESOL	T	3.40E 03	3.40E 01	1.30E 02	6
20 B 020*	P	W	4,6-DINITRO-O-CRESOL	T	3.40E 03	3.40E 01	1.30E 02	6
18 A 141*			2,3-XYLENOL	T	3.40E 03	3.40E 01	1.30E 02	6
18 C 080*		W	INDANOLS	T	3.40E 03	3.40E 01	1.30E 02	6
18 A 162*			4-ETHYL-O-CRESOL	T	3.40E 03	3.40E 01	1.30E 02	6
08 A 040*		W	ACETIC ACID	T	3.40E 03	1.70E 01	6.50E 01	6
08 D 143*			ISOAMYL ACETATE	T	3.40E 03	1.70E 01	6.50E 01	6
08 D 140*			AMYL ACETATES	T	3.40E 03	1.70E 01	6.50E 01	6
10 C 020*			ANILINE	T	3.40E 03	1.70E 01	6.50E 01	6
08 D 121*			N-BUTYL ACETATE	T	3.40E 03	1.70E 01	6.50E 01	6
08 D 142*			SEC-AMYL ACETATE	T	3.40E 03	1.70E 01	6.50E 01	6
08 D 120*			BUTYL ACETATES	T	3.40E 03	1.70E 01	6.50E 01	6
08 D 122*			SEC-BUTYL ACETATE	T	3.40E 03	1.70E 01	6.50E 01	6
10 A 080*		W	1,2-DIAMINOETHANE	T	3.40E 03	1.70E 01	6.50E 01	6
08 D 123*			ISOBUTYL ACETATE	T	3.40E 03	1.70E 01	6.50E 01	6
08 D 141*			N-AMYL ACETATE	T	3.40E 03	1.70E 01	6.50E 01	6
02 B 080*	P	W	TETRACHLOROETHENE	T	2.60E 03	1.30E 01	4.93E 01	1
02 A 340*	P		DICHLOROPROPANES	T	2.60E 03	1.30E 01	4.93E 01	1
02 A 343*			1,3-DICHLOROPROPANE	T	2.60E 03	1.30E 01	4.93E 01	1
02 B 104*			TRANS-1,3-DICHLOROPROPENE	T	2.60E 03	1.30E 01	4.93E 01	1
02 B 100*	P	W	DICHLOROPROPENES	T	2.60E 03	1.30E 01	4.93E 01	1
02 B 103*			CIS-1,3-DICHLOROPROPENE	T	2.60E 03	1.30E 01	4.93E 01	1
82 A 010	P		CADMIUM	S	2.00E 00	1.00E 01	3.80E 01	
34 A 010			CALCIUM (AS CA+2)	D	2.90E 04	9.10E 00	3.44E 01	
81 A 010	P		ZINC	S	1.60E 02	8.00E 00	3.03E 01	
19 B 020*		W	CHLORINATED CRESOLS	T	7.70E 02	7.70E 00	2.92E 01	5
20 B 042*			2,6-DINITRO-P-CRESOL	T	7.70E 02	7.70E 00	2.92E 01	5
18 B 020*		W	CATECHOL	T	7.70E 02	7.70E 00	2.92E 01	5
18 B 040*		W	1,3-DIHYDROXYBENZENE	T	7.70E 02	7.70E 00	2.92E 01	5

CYCLONE DUST, ECOLOGY IMPACT

DMEG NO.			COMPOUND NAME	TYPE	CONC E-6 G/G	DS	WDS G/S	LCCAT
18 C 082*			4-INDANOL	T	7.70E 02	7.70E 00	2.92E 01	5
19 B 021*			CHLORINATED-O-CRESOLS	T	7.70E 02	7.70E 00	2.92E 01	5
18 A 120*		W	2,2'-DIHYDROXYDIPHENYL	T	7.70E 02	7.70E 00	2.92E 01	5
18 B 060*		W	1,4-DIHYDROXYBENZENE	T	7.70E 02	7.70E 00	2.92E 01	5
18 A 140*		W	XYLENOLS	T	7.70E 02	7.70E 00	2.92E 01	5
18 B 080*		W	1,2,3-TRIHYDROXYBENZENE	T	7.70E 02	7.70E 00	2.92E 01	5
18 A 183*			2,6-DIMETHYL-4-HEPTYL PHENOL	T	7.70E 02	7.70E 00	2.92E 01	5
18 C 020*		W	1-NAPHTHOL	T	7.70E 02	7.70E 00	2.92E 01	5
18 A 180*		W	POLYALKYLPHENOLS (MW>135)	T	7.70E 02	7.70E 00	2.92E 01	5
18 A 040*		W	CRESOLS	T	7.70E 02	7.70E 00	2.92E 01	5
18 A 181*			2,4,6-TRIMETHYL METHYL PHENOL	T	7.70E 02	7.70E 00	2.92E 01	5
19 B 022*	P		CHLORINATED-M-CRESOLS	T	7.70E 02	7.70E 00	2.92E 01	5
18 A 182*			4,6-DI-TERT-BUTYL-M-CRESOL	T	7.70E 02	7.70E 00	2.92E 01	5
19 B 023*			CHLORINATED-P-CRESOLS	T	7.70E 02	7.70E 00	2.92E 01	5
18 C 081*			1-INDANOL	T	7.70E 02	7.70E 00	2.92E 01	5
18 A 103*			M-PHENYLPHENOL	T	7.70E 02	7.70E 00	2.92E 01	5
23 B 080*		W	ACRIDINE	T	7.70E 02	7.70E 00	2.92E 01	5
18 A 083*			P-ETHYLPHENOL	T	7.70E 02	7.70E 00	2.92E 01	5
18 A 160*		W	ETHYL CRESOLS	T	7.70E 02	7.70E 00	2.92E 01	5
18 A 161*			6-ETHYL-M-CRESOL	T	7.70E 02	7.70E 00	2.92E 01	5
19 A 020*	P		2-CHLOROPHENOL	T	7.70E 02	7.70E 00	2.92E 01	5
19 A 040*	P		2,4-DICHLOROPHENOL	T	7.70E 02	7.70E 00	2.92E 01	5
18 A 162*			4-ETHYL-O-CRESOL	T	7.70E 02	7.70E 00	2.92E 01	5
18 A 163*			2-ETHYL-P-CRESOL	T	7.70E 02	7.70E 00	2.92E 01	5
20 B 041*			3,5-DINITRO-P-CRESOL	T	7.70E 02	7.70E 00	2.92E 01	5
18 A 020*	P	W	PHENOL	T	7.70E 02	7.70E 00	2.92E 01	5
18 A 142*	P		2,4-XYLENOL	T	7.70E 02	7.70E 00	2.92E 01	5
18 A 100*		W	PHENYLPHENOLS	T	7.70E 02	7.70E 00	2.92E 01	5
18 A 143*			2,5-XYLENOL	T	7.70E 02	7.70E 00	2.92E 01	5
18 A 101*			O-PHENYLPHENOL	T	7.70E 02	7.70E 00	2.92E 01	5
18 A 144*			2,6-XYLENOL	T	7.70E 02	7.70E 00	2.92E 01	5
18 A 102*			P-PHENYLPHENOL	T	7.70E 02	7.70E 00	2.92E 01	5
18 A 042*			O-CRESOL	T	7.70E 02	7.70E 00	2.92E 01	5
18 A 146*			3,4-XYLENOL	T	7.70E 02	7.70E 00	2.92E 01	5

CYCLONE DUST, ECOLOGY IMPACT

DMEG NO.			COMPOUND NAME	TYPE	CONC E-6 G/G	DS	WDS G/S	LCCAT
18 C 083*			5-INDANOL	T	7.70E 02	7.70E 00	2.92E 01	5
18 A 060*		W	2-METHOXYPHENOL	T	7.70E 02	7.70E 00	2.92E 01	5
20 A 020*	P		2-NITROPHENOL	T	7.70E 02	7.70E 00	2.92E 01	5
20 B 020*	P	W	4,6-DINITRO-O-CRESOL	T	7.70E 02	7.70E 00	2.92E 01	5
20 A 040*			3-NITROPHENOL	T	7.70E 02	7.70E 00	2.92E 01	5
18 A 141*			2,3-XYLENOL	T	7.70E 02	7.70E 00	2.92E 01	5
20 A 060*	P		4-NITROPHENOL	T	7.70E 02	7.70E 00	2.92E 01	5
20 B 040*		W	DINITRO-P-CRESOLS	T	7.70E 02	7.70E 00	2.92E 01	5
18 A 043*			P-CRESOL	T	7.70E 02	7.70E 00	2.92E 01	5
18 C 040*		W	2-NAPHTHOL	T	7.70E 02	7.70E 00	2.92E 01	5
18 A 080*		W	ETHYLPHENOLS	T	7.70E 02	7.70E 00	2.92E 01	5
18 C 080*		W	INDANOLS	T	7.70E 02	7.70E 00	2.92E 01	5
18 A 041*			M-CRESOL	T	7.70E 02	7.70E 00	2.92E 01	5
18 A 145*			3,5-XYLENOL	T	7.70E 02	7.70E 00	2.92E 01	5
18 A 082*			M-ETHYLPHENOL	T	7.70E 02	7.70E 00	2.92E 01	5
20 A 120*			2,4,6-TRINITROPHENOL	T	7.70E 02	7.70E 00	2.92E 01	5
18 A 081*			O-ETHYLPHENOL	T	7.70E 02	7.70E 00	2.92E 01	5
16 A 040*			BROMOBENZENE	T	1.40E 02	7.00E 00	2.70E 01	2
16 A 161*			1,2,4-TRICHLOROBENZENE	T	1.40E 02	7.00E 00	2.70E 01	2
16 A 081*			1-BROMO-2-CHLOROBENZENE	T	1.40E 02	7.00E 00	2.70E 01	2
16 A 160*	P		POLYCHLORINATED BENZENES	T	1.40E 02	7.00E 00	2.70E 01	2
16 A 120*	P		1,3-DICHLOROBENZENE	T	1.40E 02	7.00E 00	2.70E 01	2
16 A 020*	P		CHLOROBENZENE	T	1.40E 02	7.00E 00	2.70E 01	2
17 A 082*			3,4-DINITROTOLUENE	T	1.40E 03	7.00E 00	2.70E 01	4
17 A 081*	P		2,6-DINITROTOLUENE	T	1.40E 03	7.00E 00	2.70E 01	4
16 B 042*			1,3-BIS(CHLOROMETHYL)BENZENE	T	1.40E 02	7.00E 00	2.70E 01	2
21 A 020*	P		NAPHTHALENE	T	1.40E 02	7.00E 00	2.70E 01	2
16 B 043*			1,4-BIS(CHLOROMETHYL)BENZENE	T	1.40E 02	7.00E 00	2.70E 01	2
16 A 162*			HEXACHLOROBENZENE	T	1.40E 02	7.00E 00	2.70E 01	2
17 A 083*			2,3-DINITROTOLUENE	T	1.40E 03	7.00E 00	2.70E 01	4
17 A 084*	P		2,4-DINITROTOLUENE	T	1.40E 03	7.00E 00	2.70E 01	4
16 A 140*	P		1,4-DICHLOROBENZENE	T	1.40E 02	7.00E 00	2.70E 01	2
17 A 086*			3,5-DINITROTOLUENE	T	1.40E 03	7.00E 00	2.70E 01	4
17 A 085*			2,5-DINITROTOLUENE	T	1.40E 03	7.00E 00	2.70E 01	4

CYCLONE DUST, ECOLOGY IMPACT

DMEG NO.			COMPOUND NAME	TYPE	CONC E-6 G/G	DS	WDS G/S	LCCAT
16 A 083*			1-BROMO-4-CHLOROBENZENE	T	1.40E 02	7.00E 00	2.70E 01	2
16 A 060*			DIBROMOBENZENES	T	1.40E 02	7.00E 00	2.70E 01	2
17 A 042*			3-NITROTOLUENE	T	1.40E 03	7.00E 00	2.70E 01	4
16 B 040*			BIS(CHLOROMETHYL)BENZENES	T	1.40E 02	7.00E 00	2.70E 01	2
16 A 061*			1,2-DIBROMOBENZENE	T	1.40E 02	7.00E 00	2.70E 01	2
16 B 041*			1,2-BIS(CHLOROMETHYBENZENE	T	1.40E 02	7.00E 00	2.70E 01	2
17 A 080*		W	DINITROTOLUENES	T	1.40E 03	7.00E 00	2.70E 01	4
16 A 082*			1-BROMO-3-CHLOROBENZENE	T	1.40E 02	7.00E 00	2.70E 01	2
16 A 062*			1,3-DIBROMOBENZENE	T	1.40E 02	7.00E 00	2.70E 01	2
16 B 020*		W	A-CHLOROTOLUENE	T	1.40E 02	7.00E 00	2.70E 01	2
16 A 063*			1,4-DIBROMOBENZENE	T	1.40E 02	7.00E 00	2.70E 01	2
17 A 020*	P	W	NITROBENZENE	T	1.40E 03	7.00E 00	2.70E 01	4
17 A 040*		W	NITROTOLUENES	T	1.40E 03	7.00E 00	2.70E 01	4
17 A 043*			4-NITROTOLUENE	T	1.40E 03	7.00E 00	2.70E 01	4
04 A 050*		W	EPICHLORHYDRIN	T	1.40E 03	7.00E 00	2.70E 01	4
04 A 060*		W	1-CHLORO-1,3-EPOXYPROPANE	T	1.40E 03	7.00E 00	2.70E 01	4
16 A 100*	P		1,2-DICHLOROBENZENE	T	1.40E 02	7.00E 00	2.70E 01	2
17 A 041*			2-NITROTOLUENE	T	1.40E 03	7.00E 00	2.70E 01	4
04 A 040*		W	2-CHLORO-1,2-EPOXYPROPANE	T	1.40E 03	7.00E 00	2.70E 01	4
16 A 080*			BROMOCHLOROBENZENES	T	1.40E 02	7.00E 00	2.70E 01	2
15 B 120*		W	TETRAHYDRONAPHTHALENE	T	1.30E 03	6.50E 00	2.50E 01	3
15 A 120*		W	ISOPROPYL BENZENE	T	1.30E 03	6.50E 00	2.50E 01	3
15 B 101*			O-DIETHYL BENZENE	T	1.30E 03	6.50E 00	2.50E 01	3
15 B 106*			1,4-DI-TERT-BUTYL BENZENE	T	1.30E 03	6.50E 00	2.50E 01	3
15 B 102*			M-DIETHYL BENZENE	T	1.30E 03	6.50E 00	2.50E 01	3
15 A 060*	P	W	ETHYL BENZENE	T	1.30E 03	6.50E 00	2.50E 01	3
15 B 081*			O-XYLENE	T	1.30E 03	6.50E 00	2.50E 01	3
15 B 083*			P-XYLENE	T	1.30E 03	6.50E 00	2.50E 01	3
15 B 082*			M-XYLENE	T	1.30E 03	6.50E 00	2.50E 01	3
15 A 100*		W	PROPYL BENZENE	T	1.30E 03	6.50E 00	2.50E 01	3
15 A 040*	P	W	TOLUENE	T	1.30E 03	6.50E 00	2.50E 01	3
15 B 105*			M-DIISOPROPYL BENZENE	T	1.30E 03	6.50E 00	2.50E 01	3
15 B 104*			O-DIISOPROPYL BENZENE	T	1.30E 03	6.50E 00	2.50E 01	3
15 B 100*		W	DIALKYL BENZENES (MW:134-191)	T	1.30E 03	6.50E 00	2.50E 01	3

CYCLONE DUST, ECOLOGY IMPACT

DMEG NO.		COMPOUND NAME	TYPE	CONC E-6 G/G	DS	WDS G/S	LCCAT
15 A 080*	W	STYRENE	T	1.30E 03	6.50E 00	2.50E 01	3
15 B 103*		P-DIETHYL BENZENE	T	1.30E 03	6.50E 00	2.50E 01	3
15 B 080*	W	XYLENES	T	1.30E 03	6.50E 00	2.50E 01	3
49 A 010	P	ARSENIC	D	6.30E 01	6.30E 00	2.40E 01	
08 A 040*	W	ACETIC ACID	T	1.10E 03	5.50E 00	2.10E 01	7
15 B 020*		INDAN	T	1.30E 03	4.64E 00	1.80E 01	5
08 D 143*		ISOAMYL ACETATE	T	7.70E 02	3.84E 00	1.50E 01	5
17 A 081*	P	2,6-DINITROTOLUENE	T	7.70E 02	3.84E 00	1.50E 01	5
04 A 060*	W	1-CHLORO-1,3-EPOXYPROPANE	T	7.70E 02	3.84E 00	1.50E 01	5
08 D 121*		N-BUTYL ACETATE	T	7.70E 02	3.84E 00	1.50E 01	5
08 A 040*	W	ACETIC ACID	T	7.70E 02	3.84E 00	1.50E 01	5
08 D 140*		AMYL ACETATES	T	7.70E 02	3.84E 00	1.50E 01	5
17 A 084*	P	2,4-DINITROTOLUENE	T	7.70E 02	3.84E 00	1.50E 01	5
08 D 123*		ISOBUTYL ACETATE	T	7.70E 02	3.84E 00	1.50E 01	5
17 A 020*	P W	NITROBENZENE	T	7.70E 02	3.84E 00	1.50E 01	5
08 D 120*		BUTYL ACETATES	T	7.70E 02	3.84E 00	1.50E 01	5
17 A 082*		3,4-DINITROTOLUENE	T	7.70E 02	3.84E 00	1.50E 01	5
17 A 085*		2,5-DINITROTOLUENE	T	7.70E 02	3.84E 00	1.50E 01	5
10 A 080*	W	1,2-DIAMINOETHANE	T	7.70E 02	3.84E 00	1.50E 01	5
17 A 083*		2,3-DINITROTOLUENE	T	7.70E 02	3.84E 00	1.50E 01	5
08 D 122*		SEC-BUTYL ACETATE	T	7.70E 02	3.84E 00	1.50E 01	5
04 A 040*	W	2-CHLORO-1,2-EPOXYPROPANE	T	7.70E 02	3.84E 00	1.50E 01	5
17 A 043*		4-NITROTOLUENE	T	7.70E 02	3.84E 00	1.50E 01	5
17 A 080*	W	DINITROTOLUENES	T	7.70E 02	3.84E 00	1.50E 01	5
17 A 086*		3,5-DINITROTOLUENE	T	7.70E 02	3.84E 00	1.50E 01	5
17 A 040*	W	NITROTOLUENES	T	7.70E 02	3.84E 00	1.50E 01	5
08 D 141*		N-AMYL ACETATE	T	7.70E 02	3.84E 00	1.50E 01	5
10 C 020*		ANILINE	T	7.70E 02	3.84E 00	1.50E 01	5
08 D 142*		SEC-AMYL ACETATE	T	7.70E 02	3.84E 00	1.50E 01	5
17 A 041*		2-NITROTOLUENE	T	7.70E 02	3.84E 00	1.50E 01	5
04 A 050*	W	EPICHLORHYDRIN	T	7.70E 02	3.84E 00	1.50E 01	5
17 A 042*		3-NITROTOLUENE	T	7.70E 02	3.84E 00	1.50E 01	5
78 A 010	P	COPPER	T	7.70E 02	3.84E 00	1.50E 01	5
54 A 010	P	SELENIUM	8	3.00E 01	3.00E 00	1.14E 01	
			D	1.40E 01	2.80E 00	1.10E 01	

CYCLONE DUST, ECOLOGY IMPACT

DMEG NO.		COMPOUND NAME	TYPE	CONC E-6 G/G	DS	WDS G/S	LCCAT
36 A 010		BARIUM	D	1.30E 03	2.60E 00	9.90E 00	
62 A 010		TITANIUM	D	4.00E 02	2.50E 00	9.50E 00	
08 A 080*		VALERIC ACID	T	3.40E 03	2.30E 00	8.61E 00	6
76 A 010	P	NICKEL	S	4.00E 00	2.00E 00	7.60E 00	
08 A 101*		CAPROIC ACID	T	3.40E 03	1.90E 00	7.20E 00	6
08 A 104*		LAURIC ACID	T	3.40E 03	1.90E 00	7.20E 00	6
08 A 102*		CAPRYLIC ACID	T	3.40E 03	1.90E 00	7.20E 00	6
08 A 103*		CAPRIC ACID	T	3.40E 03	1.90E 00	7.20E 00	6
08 A 100*		SATURATED LONG CHAIN ACIDS (MW:116-201)	T	3.40E 03	1.90E 00	7.20E 00	6
08 A 180*		ADIPIC ACID	T	3.40E 03	1.80E 00	6.80E 00	6
08 D 101*		N-PROPYL ACETATE	T	3.40E 03	1.70E 00	6.50E 00	6
10 A 160*		CYCLOHEXYLAMINE	T	3.40E 03	1.70E 00	6.50E 00	6
08 D 100*		PROPYL ACETATES	T	3.40E 03	1.70E 00	6.50E 00	6
23 A 020*	W	PYRIDINE	T	3.40E 03	1.70E 00	6.50E 00	6
05 A 124*		3-METHYL-1-BUTANOL	T	3.40E 03	1.70E 00	6.50E 00	6
23 A 121*		5-ETHYL-2-METHYLPYRIDINE	T	3.40E 03	1.70E 00	6.50E 00	6
05 A 121*		N-PENTANOL	T	3.40E 03	1.70E 00	6.50E 00	6
23 A 063*		4-ETHYLPYRIDINE	T	3.40E 03	1.70E 00	6.50E 00	6
23 A 060*	W	MONOSUBSTITUTED ALKYL PYRIDINES	T	3.40E 03	1.70E 00	6.50E 00	6
23 A 122*		2,4,6-COLLIDINE	T	3.40E 03	1.70E 00	6.50E 00	6
08 B 060*	W	B-PROPIOLACTONE	T	3.40E 03	1.70E 00	6.50E 00	6
23 A 081*		2-PHENYLPYRIDINE	T	3.40E 03	1.70E 00	6.50E 00	6
23 A 120*	W	COLLIDINES	T	3.40E 03	1.70E 00	6.50E 00	6
23 A 064*		4-N-PROPYLPYRIDINE	T	3.40E 03	1.70E 00	6.50E 00	6
23 A 061*		2-ETHYLPYRIDINE	T	3.40E 03	1.70E 00	6.50E 00	6
05 A 100*	W	ISOBUTYL ALCOHOL	T	3.40E 03	1.70E 00	6.50E 00	6
05 A 122*		2-METHYL-1-BUTANOL	T	3.40E 03	1.70E 00	6.50E 00	6
23 A 080*	W	PHENYLPYRIDINES	T	3.40E 03	1.70E 00	6.50E 00	6
05 A 123*		2,2-DIMETHYL-1-PROPANOL	T	3.40E 03	1.70E 00	6.50E 00	6
10 A 060*		ETHANOLAMINE	T	3.40E 03	1.70E 00	6.50E 00	6
05 A 120*	W	PENTANOLS (PRIMARY)	T	3.40E 03	1.70E 00	6.50E 00	6
10 B 100*		MORPHOLINE	T	3.40E 03	1.70E 00	6.50E 00	6
05 A 140*	W	BENZYL ALCOHOL	T	3.40E 03	1.70E 00	6.50E 00	6
23 A 083*		4-PHENYLPYRIDINE	T	3.40E 03	1.70E 00	6.50E 00	6

CYCLONE DUST, ECOLOGY IMPACT

DMEG NO.			COMPOUND NAME	TYPE	CONC E-6 G/G	DS	WDS G/S	LCCAT
23 A 062*			3-ETHYLPYRIDINE	T	3.40E 03	1.70E 00	6.50E 00	6
08 D 080*			METHYL METHACRYLATE	T	3.40E 03	1.70E 00	6.50E 00	6
06 A 020*		W	ETHYLENE GLYCOL	T	3.40E 03	1.70E 00	6.50E 00	6
23 A 082*			3-PHENYLPYRIDINE	T	3.40E 03	1.70E 00	6.50E 00	6
07 B 100*		W	CAMPHOR	T	3.40E 03	1.54E 00	5.90E 00	6
01 A 201			N-OCTANE	T	2.60E 03	1.30E 00	4.93E 00	1
01 A 200			OCTANES	T	2.60E 03	1.30E 00	4.93E 00	1
07 B 120*			ACETOPHENONE	T	3.40E 03	1.10E 00	4.20E 00	6
71 A 010		P	MANGANESE	D	1.90E 01	9.50E-01	3.61E 00	
09 B 041*			A-NAPHTHONITRILES	T	1.40E 03	8.80E-01	3.32E 00	4
09 B 042*			B-NAPHTHONITRILES	T	1.40E 03	8.80E-01	3.32E 00	4
09 B 020*		W	BENZONITRILE	T	1.40E 03	8.80E-01	3.32E 00	4
09 B 040*		W	NAPHTHONITRILES	T	1.40E 03	8.80E-01	3.32E 00	4
08 A 140*			OLEIC ACID	T	3.40E 03	8.50E-01	3.20E 00	6
46 A 010		P	LEAD	S	8.00E 00	8.00E-01	3.04E 00	
08 A 080*			VALERIC ACID	T	1.10E 03	7.33E-01	2.80E 00	7
02 A 343*			1,3-DICHLOROPROPANE	T	1.40E 02	7.00E-01	2.70E 00	2
15 B 120*		W	TETRAHYDRONAPHTHALENE	T	1.40E 02	7.00E-01	2.70E 00	2
15 A 080*		W	STYRENE	T	1.40E 02	7.00E-01	2.70E 00	2
23 A 061*			2-ETHYLPYRIDINE	T	1.40E 03	7.00E-01	2.70E 00	4
15 A 040*	P	W	TOLUENE	T	1.40E 02	7.00E-01	2.70E 00	2
02 B 100*	P	W	DICHLOROPROPENES	T	1.40E 02	7.00E-01	2.70E 00	2
23 A 120*		W	COLLIDINES	T	1.40E 03	7.00E-01	2.70E 00	4
15 B 106*			1,4-DI-TERT-BUTYL BENZENE	T	1.40E 02	7.00E-01	2.70E 00	2
23 A 121*			5-ETHYL-2-METHYLPYRIDINE	T	1.40E 03	7.00E-01	2.70E 00	4
23 A 122*			2,4,6-COLLIDINE	T	1.40E 03	7.00E-01	2.70E 00	4
23 A 080*		W	PHENYLPYRIDINES	T	1.40E 03	7.00E-01	2.70E 00	4
04 B 040*	P	W	1,1'-DICHLORODIETHYL ETHER	T	1.40E 03	7.00E-01	2.70E 00	4
15 A 120*		W	ISOPROPYL BENZENE	T	1.40E 02	7.00E-01	2.70E 00	2
04 B 080*		W	2,2'-DICHLORODIETHYL ETHER	T	1.40E 03	7.00E-01	2.70E 00	4
23 A 081*			2-PHENYLPYRIDINE	T	1.40E 03	7.00E-01	2.70E 00	4
23 A 020*		W	PYRIDINE	T	1.40E 03	7.00E-01	2.70E 00	4
23 A 062*			3-ETHYLPYRIDINE	T	1.40E 03	7.00E-01	2.70E 00	4
02 B 080*	P	W	TETRACHLOROETHENE	T	1.40E 02	7.00E-01	2.70E 00	2

CYCLONE DUST, ECOLOGY IMPACT

DMEG NO.			COMPOUND NAME	TYPE	CONC E-6 G/G	DS	WDS G/S	LCCAT
02 B 103*			CIS-1,3-DICHLOROPROPENE	T	1.40E 02	7.00E-01	2.70E 00	2
15 B 081*			O-XYLENE	T	1.40E 02	7.00E-01	2.70E 00	2
17 B 060*		W	1-CHLORO-4-NITROBENZENE	T	1.40E 03	7.00E-01	2.70E 00	4
15 B 080*		W	XYLENES	T	1.40E 02	7.00E-01	2.70E 00	2
15 B 082*			M-XYLENE	T	1.40E 02	7.00E-01	2.70E 00	2
15 A 060*	P	W	ETHYL BENZENE	T	1.40E 02	7.00E-01	2.70E 00	2
23 A 064*			4-N-PROPYLPYRIDINE	T	1.40E 03	7.00E-01	2.70E 00	4
15 B 100*		W	DIALKYL BENZENES (MW:134-191)	T	1.40E 02	7.00E-01	2.70E 00	2
15 A 100*		W	PROPYL BENZENE	T	1.40E 02	7.00E-01	2.70E 00	2
15 B 083*			P-XYLENE	T	1.40E 02	7.00E-01	2.70E 00	2
15 B 101*			O-DIETHYL BENZENE	T	1.40E 02	7.00E-01	2.70E 00	2
03 B 020*			1,4-DIOXANE	T	1.40E 03	7.00E-01	2.70E 00	4
15 B 105*			M-DIISOPROPYL BENZENE	T	1.40E 02	7.00E-01	2.70E 00	2
15 B 103*			P-DIETHYL BENZENE	T	1.40E 02	7.00E-01	2.70E 00	2
23 A 082*			3-PHENYLPYRIDINE	T	1.40E 03	7.00E-01	2.70E 00	4
15 B 102*			M-DIETHYL BENZENE	T	1.40E 02	7.00E-01	2.70E 00	2
23 A 083*			4-PHENYLPYRIDINE	T	1.40E 03	7.00E-01	2.70E 00	4
15 B 104*			O-DIISOPROPYL BENZENE	T	1.40E 02	7.00E-01	2.70E 00	2
02 B 104*			TRANS-1,3-DICHLOROPROPENE	T	1.40E 02	7.00E-01	2.70E 00	2
23 A 063*			4-ETHYLPYRIDINE	T	1.40E 03	7.00E-01	2.70E 00	4
23 A 060*		W	MONOSUBSTITUTED ALKYL PYRIDINES	T	1.40E 03	7.00E-01	2.70E 00	4
02 A 340*	P		DICHLOROPROPANES	T	1.40E 02	7.00E-01	2.70E 00	2
17 B 040*		W	1-CHLORO-2-NITROBENZENE	T	1.40E 03	7.00E-01	2.70E 00	4
15 B 201*			1,2,3,4-TETRAMETHYLBENZENE	T	1.30E 03	6.50E-01	2.50E 00	3
15 B 200*			TETRAMETHYLBENZENES	T	1.30E 03	6.50E-01	2.50E 00	3
15 B 203*			1,2,4,5-TETRAMETHYLBENZENE	T	1.30E 03	6.50E-01	2.50E 00	3
15 B 202*			1,2,3,5-TETRAMETHYLBENZENE	T	1.30E 03	6.50E-01	2.50E 00	3
65 A 010			VANADIUM	S	1.90E 01	6.33E-01	2.40E 00	
08 A 103*			CAPRIC ACID	T	1.10E 03	6.11E-01	2.32E 00	7
08 A 102*			CAPRYLIC ACID	T	1.10E 03	6.11E-01	2.32E 00	7
08 A 100*			SATURATED LONG CHAIN ACIDS (MW:116-201)	T	1.10E 03	6.11E-01	2.32E 00	7
08 A 101*			CAPROIC ACID	T	1.10E 03	6.11E-01	2.32E 00	7
08 A 104*			LAURIC ACID	T	1.10E 03	6.11E-01	2.32E 00	7
08 A 180*			ADIPIC ACID	T	1.10E 03	5.80E-01	2.20E 00	7

CYCLONE DUST, ECOLOGY IMPACT

DMEG NO.		COMPOUND NAME	TYPE	CONC E-6 G/G	DS	WDS G/S	LCCAT
08 B 060*	W	B-PROPIOLACTONE	T	1.10E 03	5.50E-01	2.10E 00	7
08 A 080*		VALERIC ACID	T	7.70E 02	5.13E-01	2.00E 00	5
15 B 020*		INDAN	T	1.40E 02	5.00E-01	1.90E 00	2
09 B 042*		B-NAPHTHONITRILES	T	7.70E 02	4.81E-01	1.82E 00	5
09 B 040*	W	NAPHTHONITRILES	T	7.70E 02	4.81E-01	1.82E 00	5
09 B 020*	W	BENZONITRILE	T	7.70E 02	4.81E-01	1.82E 00	5
09 B 041*		A-NAPHTHONITRILES	T	7.70E 02	4.81E-01	1.82E 00	5
33 A 010		MAGNESIUM	D	7.80E 03	4.60E-01	1.74E 00	
08 A 104*		LAURIC ACID	T	7.70E 02	4.30E-01	1.62E 00	5
08 A 100*		SATURATED LONG CHAIN ACIDS (MW:116-201)	T	7.70E 02	4.30E-01	1.62E 00	5
08 A 103*		CAPRIC ACID	T	7.70E 02	4.30E-01	1.62E 00	5
08 A 102*		CAPRYLIC ACID	T	7.70E 02	4.30E-01	1.62E 00	5
08 A 101*		CAPROIC ACID	T	7.70E 02	4.30E-01	1.62E 00	5
08 A 180*		ADIPIC ACID	T	7.70E 02	4.10E-01	1.53E 00	5
23 A 020*	W	PYRIDINE	T	7.70E 02	3.90E-01	1.50E 00	5
08 D 080*		METHYL METHACRYLATE	T	7.70E 02	3.90E-01	1.50E 00	5
10 A 160*		CYCLOHEXYLAMINE	T	7.70E 02	3.90E-01	1.50E 00	5
23 A 083*		4-PHENYLPYRIDINE	T	7.70E 02	3.90E-01	1.50E 00	5
08 B 060*	W	B-PROPIOLACTONE	T	7.70E 02	3.90E-01	1.50E 00	5
05 A 100*	W	ISOBUTYL ALCOHOL	T	7.70E 02	3.90E-01	1.50E 00	5
05 A 120*	W	PENTANOLS (PRIMARY)	T	7.70E 02	3.90E-01	1.50E 00	5
17 B 060*	W	1-CHLORO-4-NITROBENZENE	T	7.70E 02	3.90E-01	1.50E 00	5
23 A 121*		5-ETHYL-2-METHYLPYRIDINE	T	7.70E 02	3.90E-01	1.50E 00	5
23 A 064*		4-N-PROPYLPYRIDINE	T	7.70E 02	3.90E-01	1.50E 00	5
10 A 060*		ETHANOLAMINE	T	7.70E 02	3.90E-01	1.50E 00	5
23 A 080*	W	PHENYLPYRIDINES	T	7.70E 02	3.90E-01	1.50E 00	5
08 D 100*		PROPYL ACETATES	T	7.70E 02	3.90E-01	1.50E 00	5
03 B 020*		1,4-DIOXANE	T	7.70E 02	3.90E-01	1.50E 00	5
23 A 081*		2-PHENYLPYRIDINE	T	7.70E 02	3.90E-01	1.50E 00	5
23 A 061*		2-ETHYLPYRIDINE	T	7.70E 02	3.90E-01	1.50E 00	5
05 A 122*		2-METHYL-1-BUTANOL	T	7.70E 02	3.90E-01	1.50E 00	5
23 A 082*		3-PHENYLPYRIDINE	T	7.70E 02	3.90E-01	1.50E 00	5
05 A 140*	W	BENZYL ALCOHOL	T	7.70E 02	3.90E-01	1.50E 00	5
23 A 062*		3-ETHYLPYRIDINE	T	7.70E 02	3.90E-01	1.50E 00	5

CYCLONE DUST, ECOLOGY IMPACT

OMEG NO.			COMPOUND NAME	TYPE	CONC E-6 G/G	DS	WDS G/S	LCCAT
06 A 020*		W	ETHYLENE GLYCOL	T	7.70E 02	3.90E-01	1.50E 00	5
23 A 120*		W	COLLIDINES	T	7.70E 02	3.90E-01	1.50E 00	5
23 A 060*		W	MONOSUBSTITUTED ALKYL PYRIDINES	T	7.70E 02	3.90E-01	1.50E 00	5
23 A 063*			4-ETHYLPYRIDINE	T	7.70E 02	3.90E-01	1.50E 00	5
05 A 121*			N-PENTANOL	T	7.70E 02	3.90E-01	1.50E 00	5
10 B 100*			MORPHOLINE	T	7.70E 02	3.90E-01	1.50E 00	5
08 D 101*			N-PROPYL ACETATE	T	7.70E 02	3.90E-01	1.50E 00	5
05 A 123*			2,2-DIMETHYL-1-PROPANOL	T	7.70E 02	3.90E-01	1.50E 00	5
04 B 040*	P	W	1,1'-DICHLORODIETHYL ETHER	T	7.70E 02	3.90E-01	1.50E 00	5
05 A 124*			3-METHYL-1-BUTANOL	T	7.70E 02	3.90E-01	1.50E 00	5
04 B 080*		W	2,2'-DICHLORODIETHYL ETHER	T	7.70E 02	3.90E-01	1.50E 00	5
17 B 040*		W	1-CHLORO-2-NITROBENZENE	T	7.70E 02	3.90E-01	1.50E 00	5
23 A 122*			2,4,6-COLLIDINE	T	7.70E 02	3.90E-01	1.50E 00	5
07 B 100*		W	CAMPHOR	T	7.70E 02	3.90E-01	1.50E 00	5
08 A 140*			OLEIC ACID	T	7.70E 02	3.50E-01	1.33E 00	5
07 B 120*			ACETOPHENONE	T	1.10E 03	2.70E-01	1.01E 00	7
68 A 010	P		CHROMIUM	T	7.70E 02	2.50E-01	9.43E-01	5
79 A 010	P		SILVER	S	1.10E 01	2.20E-01	8.40E-01	
08 A 140*			OLEIC ACID	S	2.00E 00	2.00E-01	7.60E-01	
05 A 080*			N-BUTANOL	T	7.70E 02	1.90E-01	7.13E-01	5
08 D 320*	P		BUTYL BENZYL PHTHALATE	T	3.40E 03	1.70E-01	6.50E-01	6
05 C 040*		W	T-PENTANOL	T	3.40E 03	1.70E-01	6.50E-01	6
06 A 040*			PROPYLENE GLYCOL	T	3.40E 03	1.70E-01	6.50E-01	6
08 B 080*			Y-BUTYROLACTONE	T	3.40E 03	1.70E-01	6.50E-01	6
74 A 010			COBALT	T	3.40E 03	1.70E-01	6.50E-01	6
27 A 010			LITHIUM	S	5.00E 00	1.00E-01	3.80E-01	
15 B 203*			1,2,4,5-TETRAMETHYLBENZENE	S	6.00E 00	8.00E-02	3.03E-01	
15 B 200*			TETRAMETHYLBENZENES	T	1.40E 02	7.00E-02	2.70E-01	2
15 B 201*			1,2,3,4-TETRAMETHYLBENZENE	T	1.40E 02	7.00E-02	2.70E-01	2
15 B 202*			1,2,3,5-TETRAMETHYLBENZENE	T	1.40E 02	7.00E-02	2.70E-01	2
08 B 080*			Y-BUTYROLACTONE	T	1.40E 02	7.00E-02	2.70E-01	2
83 A 010	P		MERCURY	T	1.10E 03	5.50E-02	2.10E-01	7
05 C 040*		W	T-PENTANOL	D	< 2.30E 00<	4.60E-02<	1.74E-01	
08 D 320*	P		BUTYL BENZYL PHTHALATE	T	7.70E 02	3.90E-02	1.50E-01	5
				T	7.70E 02	3.90E-02	1.50E-01	5

CYCLONE DUST, ECOLOGY IMPACT

DMEG NO.	COMPOUND NAME	TYPE	CONC E-6 G/G	DS	WDS G/S	LOCAT
06 A 040*	PROPYLENE GLYCOL	T	7.70E 02	3.90E-02	1.50E-01	5
08 B 080*	Y-BUTYROLACTONE	T	7.70E 02	3.90E-02	1.50E-01	5
05 A 080*	N-BUTANOL	T	7.70E 02	3.90E-02	1.50E-01	5
32 A 010 P	BERYLLIUM	S	4.00E-01	3.63E-02	1.40E-01	
37 A 010	BORON	D	1.10E 02	2.20E-02	8.40E-02	
50 A 010 P	ANTIMONY	D	< 4.00E-01<	1.00E-02<	3.80E-02	
85 A 010	URANIUM	S	9.00E-01	9.00E-03	3.42E-02	
69 A 010	MOLYBDENUM	S	2.00E 00	1.42E-03	5.42E-03	
12 A 060* P	N-NITROSODIPROPYLAMINE	T	3.40E 03	0.00E-01	0.00E-01	0
02 B 140* P	HEXACHLOROCYCLOPENTADIENE	T	2.60E 03	0.00E-01	0.00E-01	1
02 B 140* P	HEXACHLOROCYCLOPENTADIENE	T	1.40E 02	0.00E-01	0.00E-01	2
04 A 160* P	A-CHLOROBUTYL ETHYL ETHER	T	7.70E 02	0.00E-01	0.00E-01	5
43 A 010	SILICON	D	1.80E 04	0.00E-01	0.00E-01	
02 B 120* P	HEXACHLOROBUTADIENE	T	2.60E 03	0.00E-01	0.00E-01	1
51 A 010	BISMUTH	S	3.00E-01	0.00E-01	0.00E-01	
04 A 140* P	2-CHLOROETHYL VINYL ETHER	T	1.40E 03	0.00E-01	0.00E-01	4
12 A 040* P	N-NITROSODIETHYLAMINE	T	3.40E 03	0.00E-01	0.00E-01	0
04 A 140* P	2-CHLOROETHYL VINYL ETHER	T	7.70E 02	0.00E-01	0.00E-01	5
04 A 160* P	A-CHLOROBUTYL ETHYL ETHER	T	1.40E 03	0.00E-01	0.00E-01	4
02 A 140* P	DIBROMOCHLOROMETHANE	T	2.60E 03	0.00E-01	0.00E-01	1
02 B 120* P	HEXACHLOROBUTADIENE	T	1.40E 02	0.00E-01	0.00E-01	2
02 A 160* P	BROMOFORM	T	2.60E 03	0.00E-01	0.00E-01	1
84 F 010	DYSPROSIUM	S	6.00E-01	0.00E-01	0.00E-01	
56 A 010	FLUORINE (AS F-)	S	2.80E 02	0.00E-01	0.00E-01	
39 A 010	GALLIUM	S	3.30E 01	0.00E-01	0.00E-01	
28 A 010	SODIUM	D	1.10E 04	0.00E-01	0.00E-01	
35 A 010	STRONTIUM	D	1.40E 03	0.00E-01	0.00E-01	
53 A 010	SULFUR	D	1.10E 04	0.00E-01	0.00E-01	
02 A 140* P	DIBROMOCHLOROMETHANE	T	1.40E 02	0.00E-01	0.00E-01	2
12 A 040* P	N-NITROSODIETHYLAMINE	T	7.70E 02	0.00E-01	0.00E-01	5
21 A 140* P	ANTHRACENE	T	1.30E 03	0.00E-01	0.00E-01	3
12 A 060* P	N-NITROSODIPROPYLAMINE	T	7.70E 02	0.00E-01	0.00E-01	5
21 A 180* P	PHENANTHRENE	T	1.30E 03	0.00E-01	0.00E-01	3
57 A 010	CHLORINE (AS CL-)	D	5.70E 01	0.00E-01	0.00E-01	

CYCLONE DUST, ECOLOGY IMPACT

DMEG NO.	COMPOUND NAME	TYPE	CONC E-6 G/G	DS	WDS G/S	LCCAT
21 B 040* P	BENZ(A)ANTHRACENE	T	1.30E 03	0.00E-01	0.00E-01	3
21 B 120* P	CHRYSENE	T	1.40E 02	0.00E-01	0.00E-01	2
21 B 120* P	CHRYSENE	T	1.30E 03	0.00E-01	0.00E-01	3
21 B 180* P	PYRENE	T	1.40E 02	0.00E-01	0.00E-01	2
21 B 180* P	PYRENE	T	1.30E 03	0.00E-01	0.00E-01	3
29 A 010	POTASSIUM	D	1.30E 03	0.00E-01	0.00E-01	
21 C 080* P	DIBENZ(A,H)ANTHRACENE	T	1.30E 03	0.00E-01	0.00E-01	3
21 C 100* P	BENZO(A)PYRENE	T	1.40E 02	0.00E-01	0.00E-01	2
21 C 100* P	BENZO(A)PYRENE	T	1.30E 03	0.00E-01	0.00E-01	3
21 D 080* PH	BENZO(GHI)PERYLENE	T	1.40E 02	0.00E-01	0.00E-01	2
21 D 080* PH	BENZO(GHI)PERYLENE	T	1.30E 03	0.00E-01	0.00E-01	3
12 A 020* P	N-NITROSODIMETHYLAMINE	T	3.40E 03	0.00E-01	0.00E-01	6
12 A 020* P	N-NITROSODIMETHYLAMINE	T	7.70E 02	0.00E-01	0.00E-01	5
22 B 040* P	FLUORANTHENE	T	1.40E 02	0.00E-01	0.00E-01	2
58 A 010	BROMINE	S	9.00E 00	0.00E-01	0.00E-01	
22 C 020* P	BENZO(K)FLUORANTHENE	T	1.40E 02	0.00E-01	0.00E-01	2
84 B 010	CERIUM	S	1.50E 01	0.00E-01	0.00E-01	
31 A 010	CESIUM	S	7.00E-01	0.00E-01	0.00E-01	
22 C 080* P	BENZO(B)FLUORANTHENE	T	1.30E 03	0.00E-01	0.00E-01	3
22 D 020* P	INDENO(1,2,3-CD)PYRENE	T	1.40E 02	0.00E-01	0.00E-01	2
22 D 020* P	INDENO(1,2,3-CD)PYRENE	T	1.30E 03	0.00E-01	0.00E-01	3
04 A 180* P	CHLOROPHENYL PHENYL ETHER	T	1.40E 03	0.00E-01	0.00E-01	4
04 A 180* P	CHLOROPHENYL PHENYL ETHER	T	7.70E 02	0.00E-01	0.00E-01	5
04 B 020* P	1,1'-DICHLOROMETHYL ETHER	T	1.40E 03	0.00E-01	0.00E-01	4
04 B 020* P	1,1'-DICHLOROMETHYL ETHER	T	7.70E 02	0.00E-01	0.00E-01	5
44 A 010	GERMANIUM	S	6.00E 00	0.00E-01	0.00E-01	
59 A 010	IODINE (AS I-)	S	4.00E-01	0.00E-01	0.00E-01	
84 A 010	LANTHANUM	S	8.00E 00	0.00E-01	0.00E-01	
16 A 200* P	CHLORONAPHTHALENES	T	1.40E 02	0.00E-01	0.00E-01	2
16 A 200* P	CHLORONAPHTHALENES	T	1.30E 03	0.00E-01	0.00E-01	3
21 A 180* P	PHENANTHRENE	T	1.40E 02	0.00E-01	0.00E-01	2
84 D 010	NEODYMIUM	S	3.00E 00	0.00E-01	0.00E-01	
21 B 040* P	BENZ(A)ANTHRACENE	T	1.40E 02	0.00E-01	0.00E-01	2
66 A 010	NIOBIUM (AS NB+3)	S	5.00E 00	0.00E-01	0.00E-01	

CYCLONE DUST, ECOLOGY IMPACT

DMEG NO.		COMPOUND NAME	TYPE	CONC E-6 G/G	DS	WDS G/S	LCCAT
84 C 010		PRASEODYMIUM	S	2.00E 00	0.00E-01	0.00E-01	
30 A 010		RUBIDIUM (AS RB+)	S	3.00E 00	0.00E-01	0.00E-01	
84 E 010		SAMARIUM	S	2.00E 00	0.00E-01	0.00E-01	
60 A 010		SCANDIUM	S	5.00E 00	0.00E-01	0.00E-01	
21 C 080*	P	DIBENZ(A,H)ANTHRACENE	T	1.40E 02	0.00E-01	0.00E-01	2
55 A 010		TELLURIUM	S	2.00E-01	0.00E-01	0.00E-01	
41 A 010	P	THALLIUM	S	9.00E-01	0.00E-01	0.00E-01	
85 B 010		THORIUM	S	2.00E 00	0.00E-01	0.00E-01	
45 A 010		TIN	S	2.00E 00	0.00E-01	0.00E-01	
70 A 010		TUNGSTEN	S	< 7.00E-01	< 0.00E-01	< 0.00E-01	
22 A 020*	PH	FLUORENE	T	1.40E 02	0.00E-01	0.00E-01	2
22 A 020*	PH	FLUORENE	T	1.30E 03	0.00E-01	0.00E-01	3
61 A 010		YTTRIUM (AS Y+3)	S	1.30E 01	0.00E-01	0.00E-01	
22 B 040*	P	FLUORANTHENE	T	1.30E 03	0.00E-01	0.00E-01	3
63 A 010		ZIRCONIUM (AS ZR+4)	S	2.90E 01	0.00E-01	0.00E-01	
22 C 020*	P	BENZO(K)FLUORANTHENE	T	1.30E 03	0.00E-01	0.00E-01	3
22 C 080*	P	BENZO(B)FLUORANTHENE	T	1.40E 02	0.00E-01	0.00E-01	2
07 B 080*	P	ISOPHORONE	T	7.70E 02	0.00E-01	0.00E-01	5
07 B 080*	P	ISOPHORONE	T	3.40E 03	0.00E-01	0.00E-01	6
08 D 300*	P	DI-2-ETHYLHEXYL PHTHALATE	T	7.70E 02	0.00E-01	0.00E-01	5
08 D 300*	P	DI-2-ETHYLHEXYL PHTHALATE	T	3.40E 03	0.00E-01	0.00E-01	6
02 A 160*	P	BROMOFORM	T	1.40E 02	0.00E-01	0.00E-01	2
02 A 320*	P	HEXACHLOROETHANE	T	2.60E 03	0.00E-01	0.00E-01	1
02 A 320*	P	HEXACHLOROETHANE	T	1.40E 02	0.00E-01	0.00E-01	2
21 A 100*	PH	ACENAPHTHENE	T	1.40E 02	0.00E-01	0.00E-01	2
21 A 100*	PH	ACENAPHTHENE	T	1.30E 03	0.00E-01	0.00E-01	3
21 A 120*	PH	ACENAPHTHYLENE	T	1.40E 02	0.00E-01	0.00E-01	2
21 A 120*	PH	ACENAPHTHYLENE	T	1.30E 03	0.00E-01	0.00E-01	3
21 A 140*	P	ANTHRACENE	T	1.40E 02	0.00E-01	0.00E-01	2

APPENDIX F

LEVEL 1 EPA HEALTH EFFECTS TESTS ON COAL GASIFICATION SAMPLES

Final Report

to

RADIAN CORPORATION

P.O. Box 9948

Austin, TX 78766

ADL Reference C-82986

Subcontract under EPA Prime Contract 68-01-4136

(Task 15, Subtask 03)

May 31, 1979

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I. INTRODUCTION

Arthur D. Little, Inc., Cambridge, MA 02140, conducted Level 1 EPA Health Effects Tests on Coal Gasification Samples for the Radian Corporation. This study was begun on March 6, 1979, and completed on May 31, 1979. Samples are identified and described in Section III.

The test matrix conducted is given below:

Test Matrix

Sample No.	Description	Bioassay			
		Ames	WI-38	RAM	Rodent
T.E. 2276	Gasifier Ash	x		x	x
T.E. 2277	Cyclone Dust	x		x	x
FS-26	Cyclone Quench Water	x	x		x
FS-1-714-2	Composite of Ash Sluice Water ='s 44, 54, 69	x	x		x
647-714	SASS Test Burner Composite	x	x		
358-714	SASS Product Gas Composite	x	x		x

II. SUMMARY OF RESULTS

In the Ames assay, no sample appeared to be mutagenic for any tester strain with or without metabolic activation. Sample 358-714 (SASS Product Gas Composite) was extremely toxic to the tester strains and could only be tested at concentrations less than 10 µl/plate.

In the WI-38 assay, samples FS-1-714-2 (Composite of Ash Sluice Water) and 358-714 (SASS Product Gas Composite) were moderately toxic. Samples FS-26 (Cyclone Quench Water) and 647-714 (SASS Test Burner Composite) were not cytotoxic at the highest concentrations tested (600 and 80 µl/ml).

In the RAM assay, samples T.E. 2276 (Gasifier Ash) and T.E. 2277 (Cyclone Dust) gave no detectable toxicity at 1,000 µg/ml.

In the Rodent Acute Toxicity (Quantal) Test, samples T.E. 2276 (Gasifier Ash), T.E. 2277 (Cyclone Dust), FS-26 (Cyclone Quench Water), FS-1-714-2 (Composite of Ash Sluice Water), and 358-714 (SASS Product Gas Composite) caused no deaths. The data indicate that the single-dose oral LD_{50} value for each of these materials is greater than 10.0 gm/kg or 10.0 ml/kg.

III. SPECIAL HANDLING OF SAMPLES

The following six samples were received at Arthur D. Little, Inc., on March 6, 1979, from D. Scott Lewis, Analytical Chemistry Division, Radian Corporation:

Sample No.	Description As Received
T.E. 2276	Gasifier Ash
T.E. 2277	Cyclone Dust
FS-26	Cyclone Quench Water
FS-1-714-2	Composite of Ash Sluice Water #'s 44, 54, 69
647-714*	SASS Test Burner Composite
358-714*	SASS Product Gas Composite

* Solvent exchanged with dimethylsulfoxide (DMSO) before assay. See text below.

Composition and stability of these materials was unknown. Residual samples remaining from the conduct of these bioassays have been returned to the Radian Corporation.

The solvents used in the bioassays are shown below:

Sample No.	Solvent Used		
	Ames	In Vitro Cytotoxicity	Rodent
T.E. 2276	Dimethylsulfoxide (suspension)	Tissue Culture Medium	Saline
T.E. 2277	Dimethylsulfoxide (suspension)	Tissue Culture Medium	Saline
FS-26	Sterile water	Tissue Culture Medium	None
FS-1-714-2	Sterile water	Tissue Culture Medium	None
647-714	Dimethylsulfoxide	Tissue Culture Medium	Not done
358-714	Dimethylsulfoxide	Tissue Culture Medium	None

Sterility

All samples were tested for sterility upon receipt. Liquid samples FS-26 and FS-1-714-2 were tested by inoculation into Trypticase Soy Broth (TSB), Thioglycollate Broth (THIO), and by streaking on nutrient agar plates. Broth tubes were incubated at 37°C and at room temperature for a period of one week. Nutrient agar plates were incubated at 37°C for one week. Solid samples T.E. 2276 and T.E. 2277 were inoculated onto nutrient agar plates and incubated at 37°C for one week. FS-26 proved to be grossly contaminated in TSB and THIO at room temperature; all other sterility checks were negative. FS-1-714-2 was grossly contaminated in all tubes at both 37°C and room temperature and the nutrient agar plates were free of contamination. Solid sample T.E. 2276 showed mold contamination and T.E. 2277 showed no contamination. Even though both liquid samples and sample T.E. 2276 showed contamination (in the sterility tests described above), we chose not to filter-sterilize these materials to avoid loss of sample on the filters. Instead, we spot-tested the samples directly in the Ames assay medium, the liquids at 250 µl/plate, and the solid at 2,000 µg/plate, all in duplicate. In this less rigorous test, no microbial contaminants grew; therefore, the materials were tested as received. Samples 647-714 and 358-714 were solvent-exchanged into DMSO upon receipt and were therefore not tested for sterility.

Solvent Exchange Procedure

Samples 647-714 (SASS Test Burner Composite) and 358-714 (SASS Product Gas Composite) were methylene chloride extracts in 1:1 methylene chloride and ethyl ether. These two samples required solvent exchange, outlined below, before bioassay.

Protocol for Solvent Exchange of Extracts in Methylene Chloride and Ethyl Ether into Dimethylsulfoxide (DMSO)

Sample 647-714 - SASS Test Burner Composite (333 ml)
Sample 358-714 - SASS Product Gas Composite (412 ml)

↓

Sample 647-714 was transferred to a flask containing 333 ml DMSO.
Sample 358-714 was transferred to a flask containing 412 ml DMSO.

↓

Samples were mixed for one minute.

↓

Methylene chloride and ethyl ether were removed under a stream of nitrogen gas at 30°C for 6 hours.

↓	↓
SASS Test Burner Composite	SASS Product Gas Composite
DMSO volume, 118.0 ml	DMSO volume, 124.0 ml
↓	↓
48.5 ml DMSO added	13.3 ml DMSO added
↓	↓
Final volume, 166.5 ml	Final volume, 137.3 ml
2X original concentration	3X original concentration

Resulting solvent-exchanged samples were concentrated 2X or 3X with respect to original volumes received. Doses and EC_{50} in bioassays are expressed in terms of original sample volumes.

IV. SALMONELLA MUTAGENESIS ASSAY (AMES) OF SAMPLES T.E. 2276, GASIFIER ASH; T.E. 2277, CYCLONE DUST; FS-26, CYCLONE QUENCH WATER; FS-1-714-2, ASH SLUICE WATER; 358-714, SASS TEST BURNER COMPOSITE; AND 647-714, SASS PRODUCT GAS COMPOSITE

SUMMARY

All samples were assayed in duplicate in the plate incorporation assay of Ames against Salmonella typhimurium strains TA-98, TA-100, TA-1535, TA-1537 and TA-1538 with and without metabolic activation. Solid samples were tested at four log doses, the highest dose being either 10 or 1 mg/plate depending upon the compatibility of the sample with the test system. Liquid samples were tested at 250, 200, 150 and 100 µl/plate except for sample 358-714 which was extremely toxic and could only be tested at 10, 2, 0.4 and 0.08 µl/plate.

No sample appeared to be mutagenic in the presence or absence of metabolic activation.

MATERIALS AND METHODS

The above samples were tested in the plate incorporation mutagenesis assay of Ames. The Salmonella typhimurium strains TA-98, TA-100, TA-1535, TA-1537 and TA-1538 used in this study were obtained from Dr. Bruce N. Ames. The protocol for the assay is described in the IERL-RTP Procedures Manual, Level 1, EPA 600/6-77-04, April, 1977. The assay was conducted with and without metabolic activation (S-9) in a culture medium which contains insufficient histidine to allow the tester strains to proliferate sufficiently to give colonies. After incubation at 37°C for 48 hours, the mutant colonies (formed by his^+ revertants) are counted. Results are reported as total number of revertants per plate and the standard error of the mean is calculated.

Briefly, in this assay 0.5 ml of the test organism, 1.0 ml of the histidine/biotin supplement and 0.1 ml of the appropriate solid sample dilution (or 1.5 ml of the appropriate liquid dilution) were added to 10.0 ml of 0.6% molten top agar (or 9.0 ml of 0.6% molten top agar for liquid samples). Two ml of this molten top agar mixture was then pipetted onto each of duplicate Minimal Glucose Agar plates with and without 0.5 ml/plate of the S-9 mixture (Aroclor-induced rat S-9 prepared at Arthur D. Little, Inc., on July 18, 1978).

Solid sample T.E. 2276, Gasifier Ash, was tested at four log doses, the highest dose being 10 mg/plate. Solid sample T.E. 2277, Cyclone Dust, was tested at four log doses, the highest dose being 1.0 mg/plate. A higher dose of T.E. 2276 could not be dispensed because of its viscosity. Both solids were tested as suspensions. Liquid samples FS-26, Cyclone Quench Water; FS-1-714-2, Composite of Ash Sluice Water; 647-714, SASS Test Burner Composite, and 358-714, SASS Product Gas Composite, were tested at 250 µl/plate, 200 µl/plate, 150 µl/plate and 100 µl/plate. Liquid sample 358-714 was highly toxic at all of these doses and at 50 µl/plate; this sample was therefore assayed at 10 µl/plate, 2.0 µl/plate, 0.4 µl/plate and 0.08 µl/plate.

Controls which were included in every experiment consisted of negative (solvent) controls for the spontaneous reversion rate for each tester strain, and the positive controls listed below, compounds which do and do not require metabolic activation. Positive controls were made up fresh the day of the assay.

	Positive Control Chemicals
Tester Strain	Non-Activation (-S-9)
TA-98	Daunomycin, 10 µg/plate
TA-100	Methylmethane sulfonate, 50 µg/plate
TA-1535	N-methyl-N'-nitro-N-nitrosoguanidine, 50 µg/plate
TA-1537	9-Aminoacridine, 50 µg/plate
TA-1538	2-Nitrofluorene, 10 µg/plate
	Activation (+S-9)
All Strains	2-Anthramine, 10 µg/plate

RESULTS

Results are presented in the following tables.

No mutagenic activity was evident in any sample.

Sample T.E. 2276 was moderately toxic at the top dose of 10 mg/plate.

Sample 358-714 was highly toxic at all four doses in the initial assay (250, 200, 150, and 100 µl/plate). It was also toxic at 50 µl/plate. At 10 µl/plate it was toxic to TA-98 and TA-1538 without metabolic activation and to TA-100 both with and without metabolic activation.

Senior Technician Evaluating Material

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AMES ASSAY

CYCLONE QUENCH WATER #FS-26 AND

COMPOSITE OF ASH SLUICE WATER #1-714-2

	Revertants Per Plate*									
	TA-98		TA-1538		TA-100		TA-1535		TA-1537	
	-S9	+S9	-S9	+S9	-S9	+S9	-S9	+S9	-S9	+S9
Control	20 ± 4	24 ± 5	15 ± 3	16 ± 1	104 ± 2	112 ± 1	10 ± 2	11 ± 1	6 ± 1	7 ± 1
2-Anthramine** (10 µg/plate)	21 ± 1	>500	14 ± 1	>500	118 ± 1	>500	7 ± 0	49 ± 3	9 ± 1	82 ± 4
Daunomycin*** (10 µg/plate)	>500	>500								
2-Nitrofluorene** (10 µg/plate)			>500	262 ± 17						
Methylmethane sulfonate** (50 µg/plate)					179 ± 9	234 ± 11				
N-methyl-N'-nitro-N-nitrosoguanidine** (50 µg/plate)							TNTC††	TNTC		
9-Aminoacridine† (50 µg/plate)									9 ± 1	9 ± 2
Cyclone Quench Water #FS-26***										
(100 µl/plate)	22 ± 1	25 ± 4	11 ± 5	15 ± 1	104 ± 5	97 ± 7	10 ± 2	9 ± 1	8 ± 1	7 ± 2
(150 µl/plate)	32 ± 0	28 ± 1	9 ± 1	16 ± 2	110 ± 5	118 ± 14	8 ± 0	8 ± 1	9 ± 1	5 ± 1
(200 µl/plate)	22 ± 2	27 ± 3	8 ± 0	12 ± 3	114 ± 9	105 ± 1	14 ± 1	7 ± 1	8 ± 1	8 ± 3
(250 µl/plate)	21 ± 1	23 ± 1	8 ± 1	14 ± 1	104 ± 8	104 ± 3	9 ± 1	11 ± 3	5 ± 1	10 ± 1
Composite of Ash Sluice Water #1-714-2***										
(100 µl/plate)	18 ± 2	20 ± 5	10 ± 1	15 ± 1	100 ± 2	110 ± 8	9 ± 2	9 ± 2	5 ± 2	9 ± 1
(150 µl/plate)	17 ± 1	26 ± 1	10 ± 4	14 ± 2	91 ± 1	116 ± 3	11 ± 1	6 ± 0	7 ± 2	6 ± 2
(200 µl/plate)	25 ± 2	29 ± 8	9 ± 3	16 ± 4	113 ± 1	110 ± 7	10 ± 2	7 ± 1	6 ± 0	11 ± 2
(250 µl/plate)	26 ± 2	23 ± 1	10 ± 1	17 ± 1	93 ± 0	105 ± 10	8 ± 0	12 ± 1	9 ± 2	6 ± 1

* Mean of 2 replicate plates ± standard error of the mean.

** Dissolved and/or suspended in dimethylsulfoxide (DMSO).

*** Dissolved in sterile water.

† Dissolved in 95% ethanol.

†† Too numerous to count.

AMES ASSAY

GASIFIER ASH #T.E. 2276 AND CYCLONE DUST #T.E. 2277

	Revertants Per Plate*									
	TA-98		TA-1538		TA-100		TA-1535		TA-1537	
	-S9	+S9	-S9	+S9	-S9	+S9	-S9	+S9	-S9	+S9
Control	23 ± 1	26 ± 1	17 ± 1	19 ± 1	96 ± 2	112 ± 2	14 ± 4	12 ± 4	6 ± 1	8 ± 1
2-Anthramine** (10 µg/plate)	34 ± 2	>500	13 ± 3	>500	127 ± 4	>500	10 ± 2	68 ± 2	6 ± 1	102 ± 1
Daunomycin*** (10 µg/plate)	TNTC††	TNTC								
2-Nitrofluorene** (10 µg/plate)			>500	>500						
Methylmethane sulfonate** (50 µg/plate)					187 ± 9	213 ± 0				
N-methyl-N'-nitro-N-nitrosoguanidine** (50 µg/plate)							>500	TNTC		
9-Aminoacridine† (50 µg/plate)									262 ± 22	141 ± 10
Gasifier Ash #T.E. 2276**										
(0.01 mg/plate)	15 ± 3	22 ± 12	14 ± 2	10 ± 0	86 ± 2	78 ± 14	12 ± 1	7 ± 2	6 ± 1	6 ± 2
(0.1 mg/plate)	20 ± 2	20 ± 4	10 ± 1	14 ± 2	85 ± 2	86 ± 8	13 ± 4	12 ± 1	7 ± 1	4 ± 0
(1.0 mg/plate)	18 ± 1	20 ± 10	12 ± 2	12 ± 1	85 ± 7	104 ± 4	10 ± 1	8 ± 2	5 ± 0	6 ± 2
(10.0 mg/plate)	17 ± 3	23 ± 3	4 ± 1	12 ± 1	86 ± 3	90 ± 2	7 ± 3	7 ± 1	6 ± 2	4 ± 0
Cyclone Dust #T.E. 2277**										
(0.001 mg/plate	20 ± 0	22 ± 4	12 ± 1	13 ± 0	78 ± 4	85 ± 7	10 ± 2	8 ± 4	6 ± 2	7 ± 1
(0.01 mg/plate)	18 ± 1	19 ± 5	11 ± 3	16 ± 1	88 ± 1	94 ± 1	12 ± 6	8 ± 3	4 ± 1	6 ± 4
(0.1 mg/plate)	18 ± 1	30 ± 1	8 ± 0	12 ± 4	100 ± 4	86 ± 1	16 ± 1	14 ± 2	4 ± 2	7 ± 3
(1.0 mg/plate)	16 ± 1	21 ± 1	10 ± 2	14 ± 2	98 ± 11	104 ± 8	14 ± 2	7 ± 2	4 ± 1	6 ± 1

* Mean of 2 replicate plates ± standard error of the mean.

** Dissolved and/or suspended in dimethylsulfoxide (DMSO)

*** Dissolved in sterile water (H_2O).

† Dissolved in 95% ethanol.

†† Too numerous to count.

AMES ASSAY

SASS TEST BURNER COMPOSITE #647-714 AND

SASS PRODUCT GAS COMPOSITE #358-714

	Revertants Per Plate*									
	TA-98		TA-1538		TA-100		TA-1535		TA-1537	
	-S9	+S9	-S9	+S9	-S9	+S9	-S9	+S9	-S9	+S9
Control	15 ± 3	30 ± 1	9 ± 2	16 ± 1	90 ± 5	108 ± 0	10 ± 1	15 ± 0	7 ± 4	5 ± 0
2-Anthramine** (10 µg/plate)	29 ± 2	265 ± 17	8 ± 2	307 ± 92	99 ± 7	361 ± 39	12 ± 1	39 ± 2	2 ± 0	19 ± 3
Daunomycin*** (10 µg/plate)	TNTC††	TNTC								
2-Nitrofluorene** (10 µg/plate)			422 ± 35	244 ± 12						
Methylmethane sulfonate** (10 µg/plate)					195 ± 2	257 ± 19				
N-methyl-N'-nitro-N-nitrosoguanidine** (50 µg/plate)							TNTC	TNTC		
9-Aminoacridine† (50 µg/plate)									10 ± 5	8 ± 1
SASS Test Burner Comp. #647-714**										
(100 µl/plate)	12 ± 3	18 ± 1	10 ± 1	16 ± 0	96 ± 2	92 ± 4	9 ± 2	14 ± 4	3 ± 0	7 ± 1
(150 µl/plate)	15 ± 2	33 ± 1	5 ± 1	18 ± 3	100 ± 9	115 ± 5	8 ± 1	17 ± 8	4 ± 1	8 ± 1
(200 µl/plate)	18 ± 0	25 ± 4	8 ± 1	17 ± 1	104 ± 3	115 ± 5	6 ± 1	19 ± 1	5 ± 1	6 ± 1
(250 µl/plate)	14 ± 3	33 ± 3	10 ± 2	21 ± 1	78 ± 13	121 ± 7	8 ± 2	13 ± 1	6 ± 2	6 ± 1
SASS Product Gas Comp. #358-714**										
(0.08 µl/plate)	11 ± 2	33 ± 4	6 ± 2	13 ± 1	62 ± 2	98 ± 6	14 ± 1	15 ± 2	1 ± 1	9 ± 3
(0.4 µl/plate)	11 ± 2	30 ± 2	5 ± 1	16 ± 2	74 ± 4	98 ± 3	8 ± 1	15 ± 2	6 ± 0	4 ± 1
(2.0 µl/plate)	23 ± 5	33 ± 2	9 ± 3	19 ± 3	68 ± 11	103 ± 13	9 ± 1	13 ± 1	5 ± 1	4 ± 1
(10 µl/plate)	toxic	23 ± 7	toxic	8 ± 1	toxic	toxic	6 ± 1	11 ± 1	5 ± 1	9 ± 1

* Mean of 2 replicate plates ± standard error of the mean.

** Dissolved and/or suspended in dimethylsulfoxide (DMSO).

*** Dissolved in sterile water.

† Dissolved in 95% ethanol.

†† Too numerous to count.

V. IN VITRO CYTOTOXICITY ASSAYS

A. WI-38 ASSAY OF SAMPLES FS-26, CYCLONE QUENCH WATER; FS-1-714-2, ASH SLUICE WATER; 647-714, SASS TEST BURNER COMPOSITE; AND 358-714, SASS PRODUCT GAS COMPOSITE

SUMMARY

Samples were assayed in triplicate in the WI-38 assay and determinations of total cell counts, cell viability (trypan blue exclusion), protein and ATP levels were made at 20 hours. Samples FS-26 and 647-714 caused no detectable toxicity at the highest concentrations tested (600 and 80 µl/ml). Samples FS-1-714-2 and 358-714 caused moderate toxicity.

	EC_{50} Values in µl/ml					
Sample	Cell Number	Viability	Viability Index	Protein	ATP	Toxicity Classification
FS-26	>600	>600	>600	>600	>600	None
FS-1-714-2	145	320	88	54	35	Moderate
647-714	>80	>80	>80	>80	>80	None
358-714	>120	>120	>120	10	14	Moderate

MATERIALS AND METHODS

WI-38 (human lung fibroblast) cells were originally received from the American Type Culture Collection and subsequently stored frozen in our liquid nitrogen bank. Cells were subcultured twice weekly in 75 cm^2 Falcon flasks (Co-Star) with Basal Medium, Eagle's modification (BME, Gibco #420-1100) plus 10% fetal calf serum (Kansas City Biologicals), 2 µmoles/ml L-glutamine, 2.5 µg/ml Fungizone, 100 units/ml Penicillin, 100 µg/ml Streptomycin, and 1.25 mg/ml $NaHCO_3$ (complete BME). After washing with Hank's Balanced Salt Solution, cells were removed by the

action of 0.25% trypsin and split in a 1:2 ratio and incubated in complete BME at 37°C in a humidified 5% CO_2 atmosphere with loose caps.

For assay, the cells (between passages 20 and 30) were plated at 2.0×10^5 cells/well in complete BME (4-well cluster dishes, Falcon Plastics) and allowed to adhere for 24 hours. The medium was then aspirated and the chemicals, diluted to appropriate concentrations in culture medium, were added to triplicate wells and the dishes incubated for 20 hours. Concentrated BME (2.5X) was used to dilute the 600 µl/ml samples of FS-26 and FS-1-714-2. Samples 647-714 and 358-714 had been solvent-exchanged into DMSO and concentrated to 2X and 3X original concentration. Due to solvent toxicity the highest concentrations of these samples that it was possible to test were 80 and 120 µl/ml, respectively (i.e., 40 µl/ml effective DMSO concentration). Changes in medium pH were noted at the beginning and end of this 20-hour period. Cells were removed by trypsinization, diluted with fresh medium, and aliquoted as follows for assay: 3.0 ml for protein assay, 1.0 ml for ATP assay, and 0.5 ml for viability and total cell counts.

The protein assay aliquots were washed twice in cold phosphate-buffered saline and the cell pellets stored at -85°C. The ATP assay aliquot was also stored at -85°C. Viability (trypan blue exclusion) and total cell count aliquots were kept on ice and determinations were made immediately; protein (Lowry method) and ATP (DuPont Luminescence Biometer) assays were performed within two weeks.

RESULTS

Results are presented in the following tables.

Cells treated with sample 358-714 (SASS Product Gas Composite) at the two highest concentrations tested (120 and 60 µl/ml) contained numerous particles and it was difficult to distinguish viable from non-viable cells.

Senior Technician Evaluating Material — Carolyn M. Creswell, M.A.

Case Leader, Senior Staff — Mildred G. Broome, Ph.D.

Section Leader, Bio/Medical Sciences Section — Andrew Sivak, Ph.D.

WI-38 CYTOTOXICITY ASSAY

Sample No.:	358-714	Cell Viability:	94.6%	EC_{50} Values	
Description of Sample:	Product Gas Composite	Passage No.:	30		
Date Received:	March 6, 1979	Seeding Population:	1.8×10^5/well	Viability:	>120 µl/ml
Date Tested:	April 10, 1979	pH Alterations:		Viability Index:	>120 µl/ml
Vehicle:	Dimethylsulfoxide	Lowest dose for pH change:	1.8 µl/ml	Protein:	10 µl/ml
		pH:	8.1	ATP:	14 µl/ml
		pH at highest dose:	7.3→8.2	Toxicity Classification:	Moderate toxicity.
				Comments:	Due to solvent toxicity, unable to test at higher concentrations.

Test Results*

Sample	Dose µl/ml	Total Cells	% Viable	Viability % T/C	Viability Index	Protein µg/ml	Protein % T/C	ATP fg/10^6 cells	ATP % T/C
Veh. Cont.**	40	2.40×10^4	82.2	-	-	42.56	-	3.42×10^9	-
1	120	4.13×10^4	94.0	114.4	1.62	16.17	38.0	5.21×10^8	15.3
Veh. Cont.	20	4.80×10^4	92.3	-	-	70.91	-	2.45×10^9	-
2	60	5.62×10^4	95.6	103.6	1.12	23.77	33.5	3.13×10^8	12.8
Veh. Cont.	6	4.47×10^4	89.7	-	-	82.06	-	2.27×10^9	-
3	18	4.18×10^4	65.2	72.7	0.61	21.03	25.6	2.47×10^8	10.9
Veh. Cont.	2	5.44×10^4	95.4	-	-	90.84	-	1.73×10^9	-
4	6	4.71×10^4	87.7	91.9	0.76	72.15	79.4	2.83×10^9	164.3
Veh. Cont.	0.6	5.27×10^4	87.3	-	-	75.50	-	2.18×10^9	-
5	1.8	5.98×10^4	90.8	104.0	1.03	78.18	103.6	2.82×10^9	129.4

* Mean values for vehicle control and triplicate test samples.
** Same concentration of vehicle as in corresponding test.

This sample was concentrated 3X in solvent exchange procedure (See Section III). Data are presented in terms of original sample volumes.

WI-38 CYTOTOXICITY ASSAY

Sample No.:	647-714	Cell Viability:	94.6%	EC_{50} Values	
Description of Sample:	SASS Test Burner Composite	Passage No.:	30		
		Seeding Population:	1.8×10^5/well	Viability:	>80 µl/ml
Date Received:	March 6, 1979	pH Alterations:		Viability Index:	>80 µl/ml
Date Tested:	April 10, 1979	Lowest dose for pH change:	1.2 µl/ml	Protein:	>80 µl/ml
Vehicle:	Dimethylsulfoxide	pH:	6.9+8.0	ATP:	>80 µl/ml
		pH at highest dose:	7.2	Toxicity Classification:	No detectable toxicity.
				Comments:	Due to solvent toxicity, unable to test at higher concentrations.

Test Results*

Sample	Dose µl/ml	Total Cells	% Viable	Viability % T/C	Viability Index	Protein µg/ml	Protein % T/C	ATP fg/10^6 cells	ATP % T/C
Veh. Cont.**	40	2.70×10^4	74.2	-	-	42.56	-	9.17×10^9	-
1	80	3.38×10^4	88.4	119.1	1.11	48.75	114.5	8.88×10^9	96.8
Veh. Cont.	20	3.47×10^4	93.3	-	-	70.91	-	1.95×10^{10}	-
2	40	4.71×10^4	93.4	100.1	1.28	70.10	98.9	2.02×10^{10}	103.8
Veh. Cont.	6	4.67×10^4	92.7	-	-	82.06	-	1.05×10^{10}	-
3	12	5.11×10^4	88.5	95.5	0.97	97.91	119.3	1.53×10^{10}	146.3
Veh. Cont.	2	3.94×10^4	88.2	-	-	90.84	-	1.03×10^{10}	-
4	4	5.60×10^4	94.5	107.1	1.34	102.67	113.0	1.02×10^{10}	98.9
Veh. Cont.	0.6	5.97×10^4	89.2	-	-	75.50	-	7.74×10^9	-
5	1.2	5.69×10^4	89.4	100.2	0.853	70.82	93.8	1.39×10^{10}	179.3

* Mean values for vehicle control and triplicate test samples.
** Same concentration of vehicle as in corresponding test.

This sample was concentrated 2X in solvent exchange procedure (see Section III). Data are presented in terms of original sample volumes.

WI-38 CYTOTOXICITY ASSAY

Sample No.:	FS-26	Cell Viability:	92%	EC_{50} Values	
Description of Sample:	Cyclone Quench Water	Passage No.:	20		
Date Received:	March 6, 1979	Seeding Population:	2.0×10^5/well	Viability:	>600 µl/ml
Date Tested:	March 27, 1979	pH Alterations:		Viability Index:	>600 µl/ml
Vehicle:	Medium (BME)	Lowest dose for pH change:	60 µl/ml	Protein:	>600 µl/ml
		pH:	7.5	ATP:	>600 µl/ml
		pH at highest dose:	7.6	Toxicity Classification:	No detectable toxicity

Test Results*

Sample	Dose µl/ml	Total Cells	% Viable	Viability % T/C	Viability Index	Protein µg/ml	Protein % T/C	ATP fg/10^6 Cells	ATP % T/C
Veh. Cont.	0	4.91×10^5	72.6	-	-	67.0	-	3.94×10^9	-
1	600	4.03×10^5	75.5	104.0	0.64	67.5	100.6	4.17×10^9	105.8
2	200	5.13×10^5	81.8	112.7	0.88	74.2	110.7	3.12×10^9	79.3
3	60	4.08×10^5	71.5	98.5	0.61	57.0	85.1	3.53×10^9	89.5
4	20	5.04×10^5	83.4	114.9	0.89	55.0	82.0	2.54×10^9	64.4
5	6	4.77×10^5	86.5	119.1	0.87	46.5	69.5	3.23×10^9	81.9

* Mean values for vehicle control and triplicate test samples.

WI-38 CYTOTOXICITY ASSAY

Sample No.:	FS 1-714-2	Cell Viability:	92%	EC_{50} Values	
Description of Sample:	Ash Sluice Water	Passage No.	20		
Date Received:	March 6, 1979	Seeding Population:	2.0×10^5/well	Viability:	320 µl/ml
Date Tested:	March 27, 1979	pH Alterations:		Viability Index:	88 µl/ml
Vehicle:	Medium (BME)	Lowest dose for pH change:	60 µl/ml	Protein:	66 µl/ml
		pH:	7.5	ATP:	35 µl/ml
		pH at highest dose:	7.6	Toxicity Classification:	Moderate

Test Results*

Sample	Dose µl/ml	Total Cells	% Viable	Viability % T/C	Viability Index	Protein µg/ml	Protein % T/C	ATP fg/10^6 Cells	ATP % T/C
Veh. Cont.	0	4.54×10^5	87.4	-	-	67.0	-	10.04×10^9	-
1	600	1.37×10^5	11.6	13.3	0.03	15.9	23.7	5.92×10^9	59.0
2	200	1.81×10^5	69.8	79.8	0.27	25.5	38.1	5.40×10^9	53.8
3	60	3.59×10^5	80.7	92.3	0.60	32.6	48.6	3.74×10^9	33.2
4	20	3.61×10^5	87.8	100.4	0.66	34.2	51.1	6.90×10^9	68.7
5	6	4.23×10^5	87.4	100.0	0.78	39.4	58.8	6.42×10^9	63.9

* Mean values for vehicle control and triplicate test samples.

B. RABBIT ALVEOLAR MACROPHAGE (RAM) ASSAY OF SAMPLES T.E. 2276, GASIFIER ASH; AND T.E. 2277, CYCLONE DUST

SUMMARY

Samples T.E. 2276 and T.E. 2277 were assayed in triplicate in the RAM assay at 1,000, 300, 100, 30 and 10 μg/ml. There was no detectable toxicity manifested in total cell counts, cell viability (trypan blue exclusion), protein and ATP levels determined at 20 hours. For sample T.E. 2277, the ATP assay showed an apparent inverse dose-response relationship which might be attributable to the particulate sample material.

MATERIALS AND METHODS

Two Specific Pathogen Free (SPF) New Zealand albino rabbits weighing 1.5 to 2.0 kilograms were purchased from Charles River Breeding Laboratories and housed in individual cages overnight at Arthur D. Little, Inc. Alveolar macrophages were collected according to procedures outlined in the IERL-RTP Procedures Manual: Level 1 Environmental Assessment Biological Tests for Pilot Studies, EPA-600/7-77-043 (April, 1977). A total of 1.7×10^8 viable macrophages were recovered (98.4% of total cells recovered). Twenty-five cm^2 Falcon flasks were seeded with 2.0×10^6 macrophages in 2.0 ml of Medium 199 containing 10% heat-inactivated fetal calf serum, 100 units/ml Penicillin, 100 μg/ml Streptomycin, 100 μg/ml Kanamycin, and 1.2 mg/ml $NaHCO_3$ (Complete Medium 199). The samples were ground to fine particles, suspended in Complete Medium 199 in appropriate concentrations and 2.0 ml aliquots were added to the flasks. The cultures were then incubated, with rocking, for 20 hours at 37°C in a humidified 5% CO_2 atmosphere.

At the end of the incubation period the medium was aspirated and retained; the cells were trypsinized and added to the aspirated medium. The following aliquots of cell suspensions were made: 4.0 ml for protein assay, 1.0 ml for ATP assay, and 0.5 ml for viability and total cell count.

The protein, ATP and viable and total cell counts were done in the same manner as described for the WI-38 assays.

RESULTS

Results are presented in the following tables.

Senior Technician Evaluating Material — Carolyn M. Creswell, M.A.

Case Leader, Senior Staff — Mildred G. Broome, Ph.D.

Section Leader, Bio/Medical Sciences Section — Andrew Sivak, Ph.D.

RABBIT ALVEOLAR MACROPHAGE CYTOTOXICITY ASSAY

Sample No.:	T.E. 2276	No. Rabbits Used:	2	EC_{50} Values	
Description of Sample:	Gasifier Ash	Cell Viability:	98.4%		
Date Received:	March 6, 1979	Differential Count:		Viability:	>1,000 µg/ml
Date Tested:	April 19, 1979	Macrophages:	100%	Viability Index:	>1,000 µg/ml
Vehicle:	Medium 199	Other:	0%	Protein:	>1,000 µg/ml
pH Alterations:		Seeding Population:	$1x10^6$ cells/flask	ATP:	>1,000 µg/ml
Lowest dose for pH change:	1,000 µg/ml			Toxicity Classification:	No detectable toxicity
pH:	7.6				
pH at highest dose:	7.6				

Test Results*

Sample	Dose µg/ml	Total Cells	Viability %	Viability % T/C	Viability Index	Protein µg/ml	Protein % T/C	ATP $fg/10^6$ cells	ATP % T/C
Veh. Cont.	0	$3.09x10^6$	99.5	-	-	264.84	-	$1.19x10^9$	-
1	1,000	$2.80x10^6$	90.8	91.3	0.82	243.04	91.8	$8.56x10^8$	71.6
2	300	$2.16x10^6$	97.5	98.0	0.68	248.54	93.8	$1.37x10^9$	114.9
3	100	$2.53x10^6$	97.1	97.6	0.80	232.35	87.7	$9.93x10^8$	83.2
4	30	$2.79x10^6$	98.5	99.0	0.89	249.93	94.4	$8.08x10^8$	67.7
5	10	$2.44x10^6$	98.3	98.8	0.78	259.24	97.9	$1.10x10^9$	92.2

* Mean values for vehicle control and triplicate test samples.

RABBIT ALVEOLAR MACROPHAGE CYTOTOXICITY ASSAY

Sample No.:	T.E. 2277	No. Rabbits Used:	2	EC_{50} Values	
Description of Sample:	Cyclone Particulate	Cell Viability:	98.4%		
Date Received:	March 6, 1979	Differential Count:		Viability:	>1,000 µg/ml
Date Tested:	April 19, 1979	Macrophages:	100%	Viability Index:	>1,000 µg/ml
Vehicle:	Medium 199	Other:	0%	Protein:	>1,000 µg/ml
pH Alterations:		Seeding Population:	$1x10^6$ cells/flask	ATP:	>1,000 µg/ml
Lowest dose for pH change:	1,000 µl/ml			Toxicity Classification:	No detectable toxicity
pH:	7.2				
pH at highest dose:	7.2				

Test Results*

Sample	Dose µg/ml	Total Cells	Viability %	Viability % T/C	Viability Index	Protein µg/ml	Protein % T/C	ATP fg/10^6 cells	ATP % T/C
Veh. Cont.	0	$2.84x10^6$	99.6	-	-	264.84	-	$9.14x10^8$	-
1	1,000	$2.73x10^6$	95.0	95.4	0.92	296.79	112.1	$8.36x10^8$	91.5
2	300	$3.23x10^6$	98.8	99.2	1.13	282.37	106.6	$6.39x10^8$	69.9
3	100	$2.87x10^6$	97.9	98.3	0.99	285.70	107.9	$5.90x10^8$	64.6
4	30	$3.38x10^6$	98.3	98.7	1.17	276.27	104.3	$4.60x10^8$	50.4
5	10	$3.21x10^6$	99.0	99.4	1.12	253.53	95.7	$5.18x10^8$	56.6

* Mean values for vehicle control and triplicate test samples.

VI. ACUTE IN VIVO TOXICOLOGICAL TEST OF SAMPLES T.E. 2276, T.E. 2277, FS-1-714-2, FS-26 AND 358-714 IN RODENTS - QUANTAL RESPONSE

SUMMARY

Samples No. T.E. 2276, T.E. 2277, FS-1-714-2, FS-26 and 358-714 were administered as a single dose by the oral route to evaluate their acute toxicity in fasted rats. All animals which received the dry test substances, T.E. 2276 and T.E. 2277 passed black, well-formed feces on Day 2, apparently the unchanged test substance. None of the numerous other signs of toxicity or pharmacological effects monitored showed meaningful deviations from control values. No mortality was recorded and resulting data suggest that the single-dose oral LD_{50} value for each of the test materials is greater than 10.0 gm/kg or 10.0 ml/kg. All animals autopsied after the two-week observation period appeared normal and no gross lesions were detected.

MATERIALS AND METHODS

The materials received from Mildred G. Broome, Project Director, Arthur D. Little, Inc., that were tested are listed below.

Sample No.	Description As Received
T.E. 2276	Gasifier Ash
T.E. 2277	Cyclone Dust
FS-1-714-2	Sluice Water
FS-26	Cyclone Quench Water
358-714	SASS Product Gas Composite

We understand that all of the solids (particulate) to be tested in this quantal response system are coal derived. The liquid samples were administered as received resulting in 2.0-2.6 ml being orally intubated/200 gm/rat. The dry materials were suspended in 0.9% physiological saline (concentration: 2 gm solid/1 ml of saline). The control animals were orally intubated with 0.9% physiological saline or 50% DMSO at the maximum volume employed with the test substances (~5.0 ml).

A group of young, adult albino Sprague-Dawley (CD) rats weighing approximately 250 gms were purchased from the Charles River Breeding Laboratories, Wilmington, Massachusetts, and conditioned in the Arthur D. Little, Inc., laboratories for a minimum of 5 days. From this group, five males and five females of comparable body weights per sex were selected for testing each compound and fasted overnight.

Prior to administering a single dose of 10 ml/kg or 10 gm/kg each animal was weighed and given a complete physical examination, as described in the IERL-RTP Procedures Manual, Level 1, EPA 600/6-77-043, April, 1977. This examination procedure also was followed immediately after administration of the test substance, and at 1, 4 and 24 hours during the first day and daily during the 14-day observation period.

Observations, in addition to mortality, were recorded and all toxic signs or pharmacological effects monitored including changes in behavior and movements, reactivity to various stimuli, cerebral and spinal reflexes, muscle tone, pupil size, secretions, nostril discharge, character and rate of breathing, palpation of cardiac region, GI events, abdominal shape, feces consistency and color, vulva, mammary glands, penis and perineal region, skin and fur changes, conjunctiva, mouth, eyeball, rectal temperature and general condition, were measured. Their frequency and severity were scored on a scale of 0 through 3 (0-normal, 1-slight, 2-moderate, 3-marked change from normal). All animals were killed on Day 15, a complete necropsy was conducted, and the weights of the liver

and kidneys were recorded. No tissues were taken for histopathological examinations per the EPA protocol.

RESULTS

Only two of the signs of toxicity or pharmacological effects monitored showed deviations from control values:

1. All rats which received the dry test substances; T.E. 2276 and T.E. 2277 passed black, well formed feces on Day 2, apparently largely derived from the test substances.

2. It should be noted that although the mean respiratory rates, mean cardiac rates and mean body temperatures showed variations, these values for the parameters monitored are within ranges expected for untreated rats, and therefore it is doubtful if these transitory changes are indicative of meaningful toxic effects.

Mean body weight gains and the weights of the liver and kidneys (Table IV), as well as the other parameters monitored, did not appear to be significantly affected by dosage of the test materials.

No mortality was recorded following oral intubation with any of the materials being evaluated under these test conditions which suggests, as shown in Tables V-IX, that the single-dose LD_{50} value for each of the test materials administered by the oral route is greater than 10.0 gm/kg.

All animals autopsied after the two-week observation period appeared normal and no gross lesions were detected.

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TABLE I

MEAN RESPIRATORY RATE/MINUTE

Material Tested		Day 1				DAY													
		0	1/2 hr	1 hr	4 hr	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Control	$\bar{X}$	165.6	121.2	164.8	182.4	208.4	214.4	194.8	201.6	166.4	173.4	180.8	189.2	194.0	178.4	180.4	171.6	176.8	203.2
(saline)	S.D.	47.5	40.2	57.1	29.4	54.0	54.5	25.9	42.8	32.7	34.1	32.5	52.0	41.2	19.0	26.5	39.2	21.5	35.7
T.E. 2276	$\bar{X}$	139.0	136.8	114.0	141.2	193.4	180.8	166.0	180.8	166.0	193.6	182.4	158.4	171.6	173.2	166.8	171.2	174.8	184.0
	S.D.	33.4	23.8	31.0	16.3	32.3	34.8	38.2	45.9	29.4	42.9	20.5	21.8	15.4	25.3	35.0	31.8	42.3	17.9
T.E. 2277	$\bar{X}$	138.4	136.0	133.6	126.4	150.8	168.4	186.0	145.2	152.4	139.0	153.6	152.4	169.2	180.4	176.2	182.0	188.4	191.2
	S.D.	34.5	32.5	32.2	19.7	37.3	38.3	53.1	30.6	25.9	27.8	30.8	39.2	19.9	23.4	27.6	27.6	25.5	29.9
FS-1-714-2	$\bar{X}$	136.4	146.8	154.4	142.4	141.6	141.2	149.6	150.0	175.6	152.8	154.0	150.4	176.8	169.6	167.2	168.0	151.6	185.6
	S.D.	21.0	26.4	31.6	26.5	23.0	16.6	32.6	23.6	25.7	28.0	36.0	15.6	30.4	32.4	25.6	35.4	35.4	28.0
FS-26	$\bar{X}$	143.6	142.8	147.2	145.2	170.6	141.2	135.2	178.8	164.4	168.4	174.8	177.6	182.0	168.8	158.0	178.4	169.2	157.6
	S.D.	37.6	30.5	28.7	18.0	41.9	31.0	31.5	31.3	21.7	10.1	20.0	16.4	29.8	24.9	21.1	29.6	14.7	22.6
Control	$\bar{X}$	153.2	128.0	114.8	120.4	161.2	160.2	147.6	168.8	192.8	179.6	174.0	196.8	169.6	188.8	177.6	184.0	173.6	173.2
(DMSO)	S.D.	39.9	38.2	29.5	24.8	30.5	37.2	20.0	27.0	26.6	34.9	20.6	28.0	27.7	18.8	33.0	35.4	25.9	23.0
358-714	$\bar{X}$	163.2	144.0	118.8	116.4	150.8	167.2	155.8	164.0	164.8	184.4	188.4	174.0	187.2	168.4	174.4	169.6	163.6	176.4
	S.D.	44.6	36.2	28.1	37.8	34.2	27.8	33.9	25.1	26.0	32.0	44.8	27.2	31.6	21.2	31.6	33.4	24.2	20.7

TABLE II
MEAN CARDIAC RATE/MINUTE

Material Tested		Day 1				DAY													
		0	1/2 hr	1 hr	4 hr	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Control	$\bar{X}$	330.0	281.6	289.2	346.8	315.6	298.0	305.6	319.2	298.0	302.8	310.0	322.0	343.6	307.2	298.4	335.2	321.2	316.4
(saline)	S.D.	42.8	52.7	59.5	26.7	48.2	41.3	21.7	18.9	19.2	37.2	33.8	34.8	23.3	17.5	50.8	18.7	25.2	28.0
T.E. 2276	$\bar{X}$	300.0	312.4	302.8	306.8	315.2	318.4	295.2	291.6	289.6	297.0	286.8	292.4	310.0	281.6	309.2	309.2	326.0	301.2
	S.D.	17.7	39.4	37.1	36.4	33.6	41.8	20.7	49.2	42.9	20.2	26.5	31.9	13.2	21.8	18.4	27.5	13.2	29.8
T.E. 2277	$\bar{X}$	326.8	313.6	304.4	309.2	311.6	282.0	310.8	311.6	294.0	299.2	311.6	314.4	292.4	288.0	297.6	319.2	298.0	298.0
	S.D.	43.5	36.9	20.0	20.8	20.7	26.4	47.4	23.9	10.4	26.6	23.0	18.5	27.5	10.2	15.3	16.8	19.6	33.7
FS-1-714-2	$\bar{X}$	282.0	319.6	289.6	305.2	294.4	293.8	292.8	316.8	303.2	319.6	294.8	289.2	301.2	304.8	304.0	284.8	298.8	293.6
	S.D.	25.0	28.9	30.6	27.7	29.6	36.7	28.6	23.8	26.7	12.0	30.9	19.0	25.7	13.8	24.9	18.2	22.5	23.4
FS-26	$\bar{X}$	262.4	308.4	269.2	288.0	298.8	287.6	288.8	291.2	289.6	297.6	303.6	285.6	305.6	292.8	290.4	294.4	260.4	290.4
	S.D.	34.1	21.2	53.6	20.7	27.0	45.5	47.4	44.6	26.2	34.2	17.1	26.6	22.3	30.1	25.5	15.3	15.4	11.8
Control	$\bar{X}$	292.8	281.2	292.8	302.8	288.0	308.0	296.4	302.4	314.4	328.4	297.2	300.4	310.0	304.8	296.0	303.6	311.2	289.2
(DMSO)	S.D.	21.7	51.7	42.0	42.6	48.3	29.7	15.5	17.5	21.4	37.8	19.9	27.4	18.1	21.8	31.2	16.3	27.8	20.8
353-714	$\bar{X}$	302.0	303.2	285.2	291.6	304.0	292.4	296.8	282.2	298.0	314.8	286.4	312.0	307.2	280.1	305.6	298.4	282.4	295.2
	S.D.	30.4	27.3	46.8	39.8	28.0	13.0	25.0	22.1	32.4	26.9	17.7	28.0	36.8	48.6	40.5	27.8	34.0	17.9

TABLE III
MEAN BODY TEMPERATURE
(Rectal C°)

Material Tested		Day				DAY													
		0	1/2 hr	1 hr	4 hr	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Control	$\bar{X}$	35.1	35.6	36.0	35.3	34.9	36.0	35.5	36.7	35.4	35.8	35.4	36.2	36.2	36.0	36.0	36.0	36.5	36.2
(saline)	S.D.	0.58	0.79	0.57	0.81	0.74	0.94	1.40	0.56	0.96	1.04	0.78	0.27	0.64	0.98	0.96	0.35	0.85	1.27
T.E. 2276	$\bar{X}$	35.0	35.5	35.5	35.2	35.5	36.5	35.6	36.4	35.1	36.2	35.9	34.8	36.7	35.8	36.6	36.7	36.4	35.8
	S.D.	0.92	1.34	0.91	1.11	1.16	0.85	1.64	0.57	1.35	0.73	1.28	1.61	1.20	1.01	1.21	0.97	1.30	1.21
T.E. 2277	$\bar{X}$	35.1	35.7	35.7	35.0	35.9	35.8	35.9	36.4	35.3	35.9	36.2	35.4	36.5	36.0	35.7	36.6	35.8	35.7
	S.D.	0.97	0.76	0.74	0.84	0.83	1.52	0.84	0.74	1.07	0.85	1.09	1.62	0.89	1.19	1.42	1.15	1.52	1.31
FS-1-714-2	$\bar{X}$	36.3	36.6	36.5	37.0	36.1	35.8	35.6	35.7	36.0	35.8	36.2	36.3	36.3	36.6	35.9	36.6	36.7	36.2
	S.D.	1.28	1.02	0.92	0.42	0.54	1.00	0.53	0.79	1.04	1.17	0.58	0.61	0.94	0.62	1.05	0.80	0.36	0.98
FS-26	$\bar{X}$	35.9	36.5	36.8	36.5	36.2	35.4	35.5	35.4	36.2	36.0	35.8	36.1	36.2	36.1	36.2	36.3	36.6	36.4
	S.D.	1.33	0.69	0.93	0.87	0.73	0.79	0.59	0.77	0.59	0.74	0.62	0.63	1.14	1.01	0.97	0.37	0.31	0.54
Control	$\bar{X}$	35.8	35.0	35.0	34.4	36.3	35.7	36.0	36.1	36.1	36.3	36.1	35.8	36.5	35.8	36.4	36.6	36.6	36.5
(DMSO)	S.D.	1.02	1.26	1.08	1.66	0.64	0.74	0.69	0.63	0.74	0.63	0.80	0.97	0.76	0.57	0.31	0.53	0.34	0.68
358-714	$\bar{X}$	35.9	36.5	36.2	36.4	35.7	35.7	35.8	35.6	36.2	35.9	36.2	36.0	36.1	36.4	36.3	36.6	36.5	36.5
	S.D.	1.35	0.59	0.65	0.71	0.90	0.50	0.66	0.73	0.46	1.27	0.73	0.73	0.73	0.94	0.84	0.67	0.38	0.39

TABLE IV

MEAN BODY WEIGHT AND LIVER AND KIDNEY WEIGHT DATA

Material Tested		Body Weight (gms)			Organ Weights (% of Body Weight)			
					Liver		Kidneys	
		Day 1	Day 8	Day 15	(gms)	(%)	(gms)	(%)
Control	$\bar{X}$	291.0	324.5	342.0	15.63	4.56	3.20	0.93
(saline)	S.D.	46.5	61.7	74.5	4.04	0.48	0.84	0.10
Wt. Gain	%		11.5	17.5				
T.E. 2276	$\bar{X}$	290.0	328.0	350.0	16.08	4.58	3.27	0.93
	S.D.	44.6	56.5	71.1	3.92	0.50	0.73	0.07
Wt. Gain	%		13.1	20.7				
T.E. 2277	$\bar{X}$	291.0	328.0	350.0	15.46	4.38	3.08	0.87
	S.D.	54.7	75.4	85.3	4.50	0.41	0.88	0.08
Wt. Gain	%		12.7	20.3				
FS-1-714-2	$\bar{X}$	216.5	265.5	287.5	13.53	4.69	2.72	0.94
	S.D.	11.1	12.6	21.1	1.87	0.38	0.37	0.08
Wt. Gain	%		22.6	32.8				
FS-26	$\bar{X}$	215.5	260.5	281.0	12.76	4.51	2.61	0.92
	S.D.	12.8	18.3	27.3	3.23	0.88	0.48	0.09
Wt. Gain	%		20.9	30.4				
Control	$\bar{X}$	229.0	273.0	304.5	15.70	5.13	2.89	0.94
(DMSO)	S.D.	19.8	12.5	22.5	2.53	0.51	0.46	0.10
Wt. Gain	%		19.2	33.0				
358-714	$\bar{X}$	221.5	266.0	290.5	15.04	5.17	2.77	0.95
	S.D.	10.0	9.7	21.7	1.97	0.42	0.38	0.08
Wt. Gain	%		20.1	31.2				

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TABLE V

SUMMARY OF SINGLE-DOSE ORAL TOXICITY OF T.E. 2276 IN RATS

Species:	Rat
Strain:	Sprague-Dawley (CD)
Body Weight Range (gm):	
Day 1	240 - 355
Day 8	255 - 405
Day 15	255 - 440

Formulation: Suspended in normal saline with agitation at room temperature.

Concentration (gm/ml): Suspension of 0.6 gm/ml.

Approximate Volume Administered (ml): 3 7 - 10.4/200-gram rat

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Dosage (gm/kg), Mortality, and Percent Mean Body Weight Gain of Survivors Post-Treatment

Dosage (gm/kg)	Mortality		% Mean Body Weight Gain	
	Day 8	Day 15	Day 8	Day 15
Control	0/10	0/10	11.5	17.5
10.0	0/10	0/10	13.1	20.7

LD_{50} (Day 15)

>10 gm/kg

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TABLE VI

SUMMARY OF SINGLE-DOSE ORAL TOXICITY OF T.E. 2277 IN RATS

Species:	Rat
Strain:	Sprague-Dawley (CD)
Body Weight Range (gm):	
Day 1	235 - 360
Day 8	240 - 410
Day 15	255 - 450

Formulation: Suspended in normal saline with agitation at room temperature.

Concentration (gm/ml): Suspension of 0.6 gm/ml.

Approximate Volume Administered (ml): 3.7 - 10.4/200-gram rat

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Dosage (gm/kg), Mortality, and Percent Mean Body Weight Gain of Survivors Post-Treatment

Dosage (gm/kg)	Mortality		% Mean Body Weight Gain	
	Day 8	Day 15	Day 8	Day 16
Control	0/10	0/10	11.5	17.5
10.0	0/10	0/10	12.7	20.3

LD_{50} (Day 15)
> 10 mg/kg

TABLE VII

SUMMARY OF SINGLE-DOSE ORAL TOXICITY OF FS-1-714-2 IN RATS

Species:	Rat
Strain:	Sprague-Dawley (CD)
Body Weight Range (gm):	
Day 1	205 - 355
Day 8	250 - 395
Day 15	255 - 425
Formulation:	As received
Concentration (gm/ml):	100%

Approximate Volume Administered (ml): 2.1 - 3.6/200-gram rat

Dosage (ml/kg), Mortality, and Percent Mean Body Weight Gain of Survivors Post-Treatment

Dosage (ml/kg	Mortality		% Mean Body Weight Gain	
	Day 8	Day 15	Day 8	Day 15
Control	0/10	0/10	11.5	17.5
10.0	0/10	0/10	22.6	32.8

LD_{50} (Day 15)

> 10 ml/kg

TABLE VIII

SUMMARY OF SINGLE-DOSE ORAL TOXICITY OF FS-26 IN RATS

Species:	Rat
Strain:	Sprague-Dawley (CD)
Body Weight Range (gm):	
Day 1	200 - 355
Day 8	225 - 395
Day 15	230 - 425
Formulation:	As recieved
Concentration (gm/ml):	100%
Approximate Volume Administered (ml):	2.0 - 3.6/200-gram rat

Dosage (ml/kg), Mortality, and Percent Mean Body Weight Gain of Survivors Post-Treatment

Dosage (ml/kg)	Mortality		% Mean Body Weight Gain	
	Day 8	Day 15	Day 8	Day 15
Control	0/10	0/10	11.5	17.5
10.0	0/10	0/10	20.9	30.4

LD_{50} (Day 15)

> 10 ml/kg

TABLE IX

SUMMARY OF SINGLE-DOSE ORAL TOXICITY OF 358-714 IN RATS

Species:	Rat
Strain:	Sprague-Dawley (CD)
Body Weight Range (gm):	
Day 1	205 - 275
Day 8	245 - 295
Day 15	250 - 340

Formulation: Received in methylene chloride solvent exchanged into DMSO

Concentration: Diluted with distilled H_2O, 2:1

Approximate Volume Administered (ml): 2.1 - 2.8/200-gram rat

Dosage (ml/kg), Mortality, and Percent Mean Body Weight Gain of Survivors Post-Treatment

Dosage (ml/kg)	Mortality		% Mean Body Weight Gain	
	Day 8	Day 15	Day 8	Day 15
Control DMSO	0/10	0/10	19.2	33.0
10.0	0/10	0/10	20.1	31.2

LD_{50} (Day 15)
> 10 ml/kg